Science
Pre.2
Term 1
2022

Unit 1

Droos Science

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Droos science

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Revision on unit 1

1 Write the scientific term:

1- *The first real periodic table to classify elements* ( )

2- *They are indicated by letters K,L,M,N,O,P&Q.* ( )

3- *They are indicated by letters s,p,d&f.* ( )

4- *A kind of elements located at middle of the periodic table.* ( )

5- *A part of millions of millions of meter.* ( )

6- *It's the ability of the atom in covalent molecule to attract the electrons of the chemical bond towards itself.* ( )

7- *They are compounds that have big difference in electronegativity between its elements.* ( )

8- *Elements have less than four electrons in outermost energy levels* ( )

9- *Elements have more than four electrons in outermost energy levels* ( )

10- *Atom of a metallic element which lost electrons during the chemical reaction.* ( )

11- *Atom of a non-metallic element which gains electrons during the chemical reaction.* ( )

12- *Atom which loses or gains electrons during the chemical reaction.* ( )

13- *Elements which have the same properties of metals and non-metals.* ( )

14- *It is the arrangement of metals descendingly according to their chemical activity.* ( )

15- *Non-metallic oxides that dissolve in water forming acidic solution.* ( )

16- *Metallic oxides that dissolve in water forming alkaline solution.* ( )

17- *The biggest atom in the modern periodic table.* ( )

18- *Monovalent elements located at s-block in modern periodic table.* ( )

19- *Monovalent elements located at p-block in modern periodic table.* ( )

20- *A weak electrostatic attraction force arises between the molecules of polar compounds.* ( )

21- *It is the addition of any substance to the water which change water properties affecting the health and the life of living organisms* ( )

22- *Mixing human and animal wastes with water.* ( )

23- *Discharging of factories wastes and sewage in seas, rivers & canals.* ( )

24- *Increasing the temperature of water in some areas that is used in cooling the nuclear reactors* ( )

25- *Dumping the atomic wastes in seas and oceans* ( )

26- *Elements having same atomic number but differ in atomic weights.* ( )

27- *They have neutral effect on litmus paper.* ( )

28- *They have acidic effect on litmus paper.* ( )

29- *They have basic effect on litmus paper.* ( )

30- *A gas evolved from the reaction of sodium with water.* ( )

2 Complete the following:

1. *Mendeleev arranged the elements in ascending order according to ……, while Moseley arranged them according to their ……*
2. *Mendeleev recorded his periodic table in his book ……..*
3. *Mendeleev left …… in his periodic table because he predicted discovering of new elements.*
4. *Mendeleev corrected the wrong estimated …… of some elements.*
5. *…….. discovered that the nucleus of the atom contains positive protons.*
6. *After studying the properties of ……, Moseley discovered that the periodicity of elements properties is related to their ……*

7. *…… discovered that the nucleus of the atom contains positive protons.*

8. *…… discovered the main energy levels in the atom.*

9. *…… added zero (0) which includes …… to his table.*

10. *Moseley located a place below his table for…… and ……*

11. *The number of main energy levels in the heaviest atom is ……*

12. *Each main energy level consists of a number of ……*

13. *The modern periodic table contains ……. elements, in which ……. elements are found naturally, while ……. prepared artificially.*

14. *The modern periodic table contains ……. horizontal rows that called …….*

15. *The modern periodic table contains ……. vertical columns that called …….*

16. *S-block elements Located at the ……. side of the periodic table and contains …… groups that take letter …….*

17. *P-block elements Located at the ……. side of the periodic table , contains …… groups that take letter ……. and they ends with ……*

18. *d-block elements are called ……., they located at the ……. side of the periodic table , they contains …… groups that take letter ……. and they start appearing from period ……*

19. *f-block elements Located …… the periodic table and contains …… and ……*

20. *Elements of letter (A) are located on ……. and ……. sides of the periodic table. While elements of letter (B) are located on ……. side of the periodic table.*

21. *The new number of group (5A) is ……., while that of zero group is …….*

22. *The atomic size is a measured by knowing …… of the atom & its unit is called …… that equals ……*

23. *The atomic size …… by increasing atomic number in same group.*

24. *The atomic size …… by increasing atomic number in same period.*

25. *The atomic size of lithium ($_3Li$) is …… than beryllium ($_4Be$).*

26. *The atomic size of lithium ($_3Li$) is …… than sodium ($_{11}Na$).*

27. *The largest atom in size is …… and the smallest one is ……*

28. *…… haven't electronegativity.*

29. *…… and …… are polar compounds.*

30. *The polarity of ammonia is …… than The polarity of water.*

31. *Metals tends to …… Outermost electrons and form ……*

32. *Non-metals tends to …… Outermost electrons and form ……*

33. *The electronic configuration of (Na^+),(Mg^{+2})&(Al^{+3}) ions is similar to ……*

34. *The electronic configuration of (P^{-3}),(S^{-2})&(Cl^-) ions is similar to ……*

35. *…… & …… are metalloid that have same properties of ……& ……*

36. *Each period starts with …… and ends with ……*

37. *The metallic property increase by increasing atomic number in same ……*

38. *There is …… relation between the metallic property and the atomic size.*

39. *…… & …… react instantly with water and hydrogen gas evolves.*

40. *…… & …… react very slowly with cold water.*

41. *…… & …… don't react with water.*

42. *…… & …… react with water vapour at high temperatures only.*

43. *…… & …… are metallic oxides that dissolve in water forming ……*

44. *…… & …… are non-metallic oxides that dissolve in water forming ……*

45. *Group (1A) elements are called …… And they located in …… block.*

46. *Group (7A) elements are called …… And they located in …… block.*

47. *Both (1A) elements and (7A) elements are …… valent elements.*

48. *Alkali metals are kept under the surface of …… or ……*

49. *Most of alkali metals have …… density in which …… , …… & ……*

float in water while …… , …… & …… sink in water.

50. *Alkali metals are …… of heat and electricity.*

51. *The reaction of sodium with water is ……. active than potassium with water.*

52. *Halogens exist in …… form in nature.*

53. *……. use to transfer heat from inside nuclear reactor to outside it.*

54. *…… radiate gamma rays which prevent microbes reproduction.*

55. *The boiling point of liquefied Nitrogen is ……*

56. *Water is necessary for and it has several uses in …… , ……& ……..*

57. *Water molecule is made of ……. oxygen atom(s) and ……. hydrogen atom(s) joined together by …… bond, the angel between them is ……*

58. *There is …… bond among molecules of water.*

59. *At normal temperature Water exists in …… State(s).*

60. *……. & ……. dissolve in water while …… doesn't dissolve in water.*

61. *Water molecules are collected together by …… bond forming …… that has …… shape.*

62. *When water freezes its density …… and its volume ……..*

63. *Water has …… Effect on litmus paper.*

64. *During electrolysis of water ……. evolved at anode while ……. at cathode.*

65. *The volume of gas evolved at anode equal ……. of the volume of gas evolved at cathode.*

66. *If the volume of the gas that evolves at the cathode is 20 cm^3 so the volume of the gas that evolves at the anode is ……*

67. *Biological Pollution causes …… ,…… and ……*

68. *Eating fish which contains …… causes the death of brain cells.*

69. *Drinking water which contains high ratio of …… leads to blindness.*

70. *Arsenic increases the infection by ……*

❸ Give an example for:

1- The biggest atom - Strongest metal.	
2- Polar compound.	
3- Metallic element.	
4- Non-metallic element.	
5- Nobel gas.	
6- Metalloid.	
7- Basic oxide	
8- Acidic oxide	
9- Amphoteric oxide	
10- Metal reacts instantly with water.	
11- Metal reacts slowly with cold water.	
12- Metal reacts with water vapor.	
13- Metal does not react with water.	
14- Alkali metal	
15- Non-metallic element exist in 1A	
16- Halogen gas.	
17- Halogen liquid.	
18- Halogen solid.	
19- Element made artificially	
20- Radioactive element.	

4 Complete the following chemical equations:

$Mg + 2HCl \longrightarrow$ .....

$Cu + 2HCl \longrightarrow$ .....

$2Mg + O_2 \longrightarrow$ .....

$MgO + H_2O \longrightarrow$ .....

$C + O_2 \longrightarrow$ .....

$CO_2 + H_2O \longrightarrow$ .....

$2Na + 2H_2O \longrightarrow$ .....

$2Na + Cl_2 \longrightarrow$ .....

$Cl_2 + 2KBr \longrightarrow$ .....

$Br_2 + 2KCl \longrightarrow$ .....

5 Show by balanced chemical equations:

a. Burning magnesium ribbon then dissolves the product in water.

.....

.....

b. The reaction of copper and zinc in diluted hydrochloric acid.

.....

.....

c. The reaction of sodium with water to form alkaline solution.

.....

d. The formation of chlorine from salt and another halogen.

.....

6 Locate the position of the following:

Element	Electronic configuration	Location	
		Group no	Period no
$_{10}Ne$			
$_{17}Cl$			
$_{20}Ca$			
$_{2}He$			

7 Find the atomic number of the following elements:

a. Element X lies in the second period and 0 group.

b. Element Y lies in the third period and 5A group.

c. Element Z lies in the 1^{st} period and group zero.

8 Who made the following:

Discovered that the nucleus contains positive protons.	
Discovered the main energy levels of the atom.	
Corrected the wrong atomic weights.	
Made the modern periodic table.	
Added (0) group to his periodic table.	
Discovered the energy sublevels.	

9 What these number indicates:

1- The boiling point of liquefied nitrogen.	
2- The angel between two single covalent bond in water.	
3- The number of element in Mendeleev periodic table.	
4- The number of element in modern periodic table.	
5- The number of elements exist in earth crust.	
6- The number of elements made artificially.	
7- The number of main energy level in heaviest atom.	
8- The number of groups in the modern periodic table.	
9- The number of groups in the s-block.	
10- The number of groups in the p-block.	
11- The number of groups in the d-block.	
12- The number of blocks in the modern periodic table.	

⑩ What is the importance of:

Cobalt 60	
Liquefied nitrogen	
Silicon	
Liquefied sodium	
Hofmann's voltameter	

⑪ Explain the behavior of the following elements with water:

1. Iron	
2. Silver	
3. Potassium	
4. Calcium	

⑫ Choose odd word & mention scientific term of another:

a. $_{19}K$ / $_{1}H$ / $_{3}Li$ / $_{4}Be$.

b. $_{15}P$ / $_{18}Ar$ / $_{9}F$ / $_{13}Al$.

c. K / N / Q / D.

d. MgO / Na_2O / CO_2 / CuO.

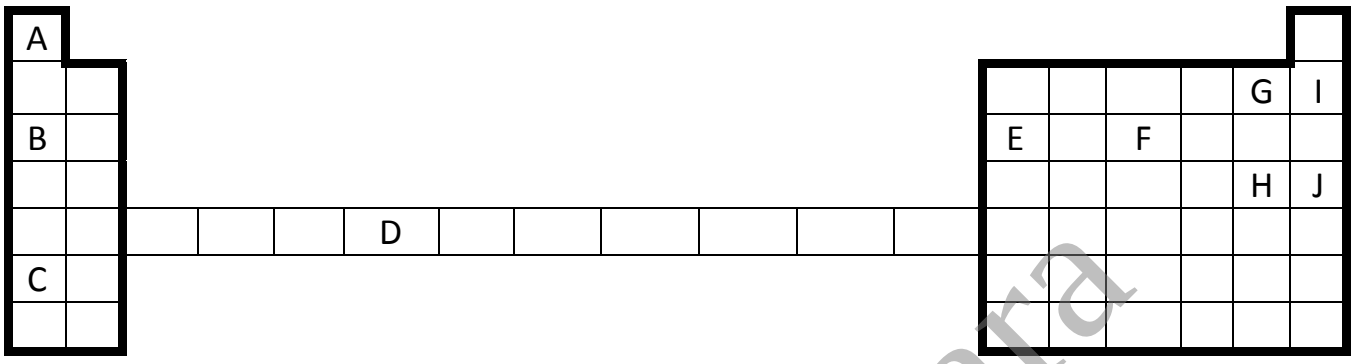
e. Chlorine / Fluorine / Bromine.

f. Lithium – Sodium – Potassium – Rubidium.

g. Sodium – Rubidium – Magnesium – Lithium.

⓭ Study the following figure then answer the following:

1. The following figure represent a part of a modern periodic table:



❶ What the letter(s) that indicate (s):	❷ What is the atomic number of :
1. Alkali metal. 2. Halogen. 3. Nobel gas. 4. Strongest metal. 5. Strongest non-metal. 6. Transition element.	B , F , H , I

❸ What is the type of oxide of element (A)?

❹ What Is the type of compound produced by combination between B & H ?

❺ What is the biggest atom in period number three?

2. The following figures represent a reaction of two pieces of sodium and potassium with water water:

Figure 1

❶ Which figure represents sodium and potassium and why?

.....

.....

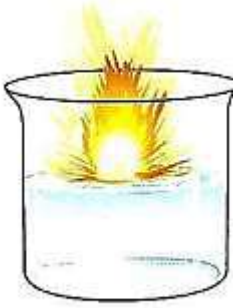


Figure 2

❷ Write the equation of each reaction?

.....

.....

❸ What is the name of the evolved gas and how to detect it?

.....

❹ What is the type of the produced solution and its effect on litmus paper?

.....

❺ What's happen to the following elements if we replace water with kerosene?

.....

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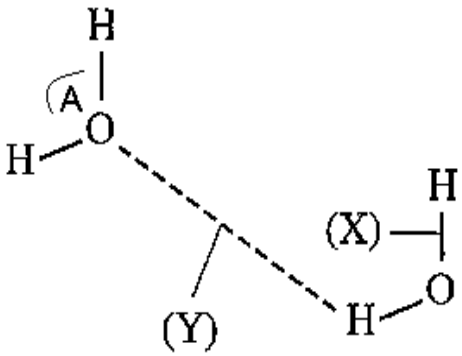
3. The following figures represent The structure of water:

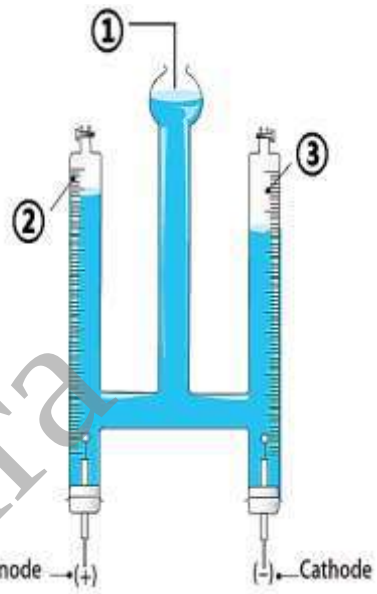
❶ What the type of bonds (x) & (y) and the value of (A)?

❷ Which bonds is responsible for abnormal properties of water?

❸ Which bonds is stronger?



4. Study the following figure then answer the following:



1. What is the name of this apparatus?

   .....

2. What the importance of this apparatus?

   .....

   .....

3. Write the balanced chemical reaction of water electrolysis?

   .....

4. Label the numbers

   ① ..... ② ..... ③ .....

5. What happens if a glowing splint is put above

   The anode .....

   The cathode.....

6. **<u>Give reason:</u>**

   ①Adding few drops of dilute sulphuric acid to water during electrolysis of water.

   ② Oxygen gas evolves at the anode, while hydrogen evolves at the cathode.

   ③ The gas evolved at cathode is twice (doubled) the gas evolved at anode.

7. **Calculate the volume of the gas that evolves at the anode if the volume of the gas that evolves at the cathode is 20 cm^3**

⑭ Give reason:

1. **scientists try to classify of elements?**

   1. *To facilitate their study.*

   2. *To find a relation between elements & their physical and chemical properties.*

2. **Mendeleev classified each main group into two subgroups (A & B)?**

   Due to the difference between elements in their properties.

3. **Mendeleev had put more than one element in same cell?**

   Due to the similarity in their properties.

4. **Mendeleev left gaps (empty cells) in his periodic table?**

   Because he predicted discovering new elements.

5. **Mendeleev deal with isotopes as different elements?**

   Because they have different atomic weights.

6. **Mendeleev made a disturbance in the ascending order in his table?**

   To put these elements in groups those have similar properties.

7. **Elements of the same group have similar properties?**

   Because they have the same number of electrons in the outermost energy level.

8. **Scientists can't discover element between $_{16}S$ and $_{17}Cl$?**

   Because the atomic number is an integer number and increase by one in period.

9. **The atomic size increases in the same group by the increase their atomic no?**

   Due to the increase in the number of energy levels in the atom.

10. **The atomic size decreases in the period by the increase of the atomic no?**

    Due the increase of the attraction force between positive nucleus and the electrons in the outermost energy level.

11. **Water (ammonia) is a polar compound?**

    Because the difference in electronegativity between its elements is high.

12. The polarity of water is more than that of ammonia??

Because the difference in electronegativity between oxygen and hydrogen in water molecule is greater than the difference in electronegativity between nitrogen and hydrogen in ammonia.

13. Magnesium oxide is considered a basic oxide?

Because it dissolves in water forming alkaline solution which turn the color of litmus solution into blue.

14. Carbon dioxide is considered acidic oxide?

Because it dissolves in water forming acidic solution which turn the color of litmus solution into red.

15. Aluminium oxide is considered amphoteric oxide?

Because it reacts as a basic oxide or acidic oxide according to the reaction conditions.

16. Cesium is considered the strongest metallic element?

Because it has the largest atomic size in the modern periodic table.

17. Group (1A) are called alkali metals?

Because they react with water forming alkali solutions.

$$2Na + 2H_2O \longrightarrow 2NaOH + H_2\uparrow$$

18. Some of alkali metals are kept under kerosene or paraffin oil?

To prevent their reaction with moist air.

19. Alkali metals are monovalent elements?

Because they lose one electron during chemical reaction forming a positive ion with one positive charge.

20. Lithium floats on water surface, while cesium sinks in water?

Because density of lithium is less than that of water while density of cesium is more than that of water.

21. Potassium is more active than sodium?

Because the atomic size of potassium is greater than that of sodium.

22. Sodium fires aren't put out with water?

Because sodium reacts strongly with water and hydrogen gas evolves which burns with pop sound.

23. Elements of group (7A) are called Halogens?

Because they react with metals forming salts.

$$2Na + Cl_2 \longrightarrow 2NaCl$$

24. Halogens are monovalent elements?

Because they gain one electron during chemical reaction forming a negative ion with one negative charge.

25. Bromine can't replace chlorine in its salt solution?

Because bromine is less active than chlorine.

26. Cobalt- 60 is used in preservation of food?

Because it produces gamma rays which prevent the reproduction of microbes.

27. Liquified Nitrogen is used in the preservation of cornea?

Because it has a very low boiling point (-196° c).

28. Table salt and sugar dissolve easily in water.?

Because Water is a polar solvent, which dissolves:

① *ionic compounds (such as table salt)*

② *Some covalent compounds (such as sugar) because they form hydrogen bonds with water.*

29. Oil doesn't dissolve in water?

because they don't form hydrogen bonds with water.

30. Rissing boiling & melting point of water?

Due to the presence of hydrogen bonds between its molecules.

31. Although water of oceans freezes at polar zones, the aquatic creatures are still alive?

Because when temperature of water becomes less than 4°C, it density decrease so it forms a layer of ice, which floats on the surface and this provides the creature with chance to be still alive.

32. On putting a glass bottle filled with water in a freezer, it breaks?

Because when water freezes, its volume increases so, the bottle explodes.

33. Pure water doesn't effect on two litmus papers?

Because pure water has a neutral effect on two litmus paper.

34. Adding drops of dilute sulphuric acid to water during electrolysis?

Because pure water is a bad conductor of electricity, but acidified water conducts electricity.

35. Oxygen gas evolves at anode, while hydrogen evolves at cathode?

Because oxygen ions are negatively charged that evolves at anode, while hydrogen ions are positively charged that evolves at the cathode.

36. The gas evolved at cathode is twice the gas evolved at anode?

Because water molecule H_2O is composed of two hydrogen atoms and one oxygen atom.

37. We should not keep the tap water in plastic bottles?

Because they react with chlorine gas which is used in disinfecting of water that increase the rate of infection of cancer.

⑮ How to protect water from pollution:

1. .....
2. .....
3. .....
4. .....

اللهم إنى أستودعك ما قرأت و ما فهمت و ما حفظت فرده لى عند حاجتى له إنك على كل شئ قدير.

Science
Pre.1
Term 1
2022

Unit 2

Droos Science

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Droos science

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1 Write the scientific term:

1- It is a gaseous envelope rotating with the Earth around its axis.

2- It is the weight of air column of an atmospheric height on a unit area.

3- The measuring unit of atmospheric pressure.

4- A device used to predict the day weather.

5- A device used by pilots in airplanes to measure the height from sea level.

6- A curved line joins the points of equal pressure in atmospheric pressure maps.

7- The region between troposphere and stratosphere.

8- The region between stratosphere and mesosphere.

9- The region between mesosphere and thermosphere.

10- It is called the disturbed layer.

11- It is called the azonic layer.

12- It is called the hottest layer.

13- It is called the coldest layer.

14- The layer between statopause and mesopause.

15- The layer between statopause and tropopause.

16- The layer that contains charged ions that reflect radio waves.

17- Two magnetic belts surround the iono-sphere layer.

18- The region in which atmosphere ends and space begins.

19- It absorbs harmful ultra-violet radiation.

20- The measuring unit of the degree of ozone.

21- Thinning or losing parts of ozone layer above the South Pole.

22- It is the continuous increase in the average temperature of the Earth.

23- It is the trapping of infrared radiation in the troposphere layer

❷ Complete the following tables :

Point of comparison	Troposphere	Stratosphere	Mesosphere	Thermosphere
Order				
Description				
Height				
Thickness				
Temperature at its top				
Atmospheric pressure				_____
Air movement			_____	_____
It contains				

Ozone pollutant	Greenhouse gases
1. 2. 3. 4. 5.	1. 2. 3. 4.

Point of comparison	Near U.v	Medium U.v	Far U.v
Wave length			
Range of penetration			
Effect on living organism			

3 What meant by:

1. **S.T.P :** .....
2. **IPCC :** .....
3. **CFCs :** .....

4 Mention the measuring unit of:

1- The atmospheric pressure.	
2- The normal degree of ozone.	
3- The wave length of UV radiation.	

5 What the number that indicates:

1- The height of the atmospheric envelope.	
2- The normal atmospheric pressure.	
3- The mass of air between sea level and 3 km height.	
4- The mass of air between 3 km height and 16 km height.	
5- The atmospheric pressure at the end of troposphere.	
6- The atmospheric pressure at the end of stratosphere.	
7- The atmospheric pressure at the end of mesosphere.	
8- The Temperature at the end of troposphere.	
9- The Temperature at the end of stratosphere.	

10- The Temperature at the end of mesosphere.	
11- The Temperature at the end of thermosphere.	
12- The height of troposphere layer.	
13- The height of stratosphere layer.	
14- The height of mesosphere layer.	
15- The height of thermosphere layer.	
16- The thickness of troposphere layer.	
17- The thickness of stratosphere layer.	
18- The thickness of mesosphere layer.	
19- The thickness of thermosphere layer.	
20- The mass of air in troposphere layer.	
21- The mass of water vapor in troposphere layer.	
22- The normal degree of ozone.	
23- The wave length of near ultra violet.	
24- The wave length of medium ultra violet.	
25- The wave length of far ultra violet.	

6 Study the opposite figures then answer:

1. The opposite figure exhibits the temperature changes in the atmosphere layers:

a. Replace the letters on the drawing with suitable labels.

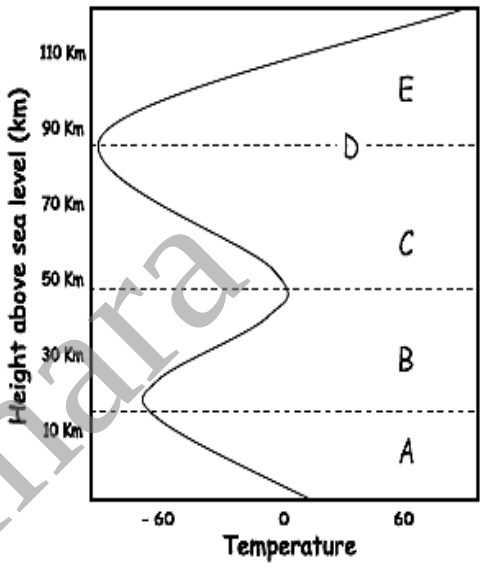
[A] .....

[B] .....

[C] .....

[D] .....

[E] .....



b. Which layer is …?

A) The highest in temperature: .....

B) The lowest in temperature: .....

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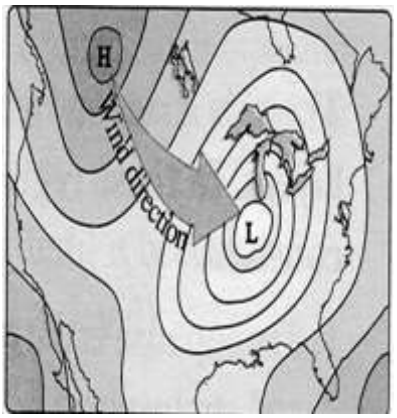
2. The opposite figure represents the atmospheric pressure map:

a. The curved lines represents .....

b. Symbol (H) represents .....

c. Symbol (L) represents .....

d. In which direction the wind moves?



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3. The opposite figure represents two magnetic belts surrounds earth:

a. What is the scientific name?

.....

b. Where are they located?

.....

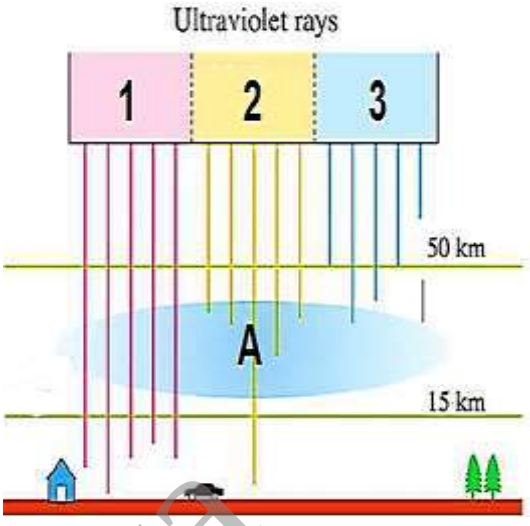
c. What is the importance of it?

.....

d. What is the phenomenon happen as result of it?

.....

4. From opposite figure, answer the following:



a. **Label the following?**

1......

2......

3......

A......

b. Which one of 1,2,3 has longest wave length?

.....

c. What is the importance of (A)?

.....

d. What is the location of (A)?

.....

e. Mention some compounds that have bad effect on (A)?

.....

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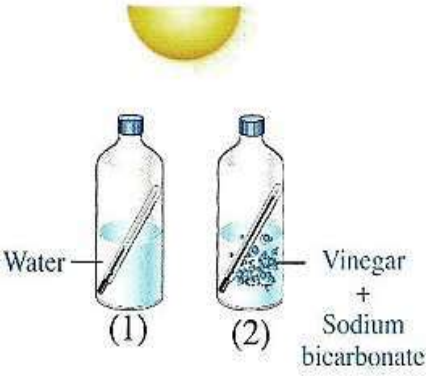
5. From opposite figure, answer the following:



a. What is the evolved gas at bottle (2)?

.....

b. In which bottle temperature increase and why?

.....

---

6. From opposite figure, answer the following:

a. What does this figure represent?

.....

b. What is the relation between this and global Warming phenomenon?

.....

.....

7 What is the importance of:

1- Barometer.	
2- Altimeter.	
3- Aneroid.	
4-Isobar.	
5- Troposphere layer.	
6- Stratosphere layer.	
7- Mesosphere layer.	
8- Ionosphere layer.	
9-Van-allen belts.	
10- Exosphere.	
11- Methyl bromide.	
12- Halons	
13- Ozone layer	

3 Choose the correct answer:

1- Atmospheric pressure is the …… of air column above the unit area..

a- density b- mass c- weight d- volume

2- The temperature decreases by …… at 2 km above sea level

a- 6.5° c b- 13° c c- - 6.5° c d-26° c

3- Water vapor in troposphere …… the temperature on the earth.

a- increase b-decrease c- organize d- doesn't affect

4- …… is the region between mesosphere and stratosphere.

a-Tropopause b-Stratopause c- mesopause

5- As air density decrease, atmospheric pressure ……..

a- increase b- decrease c- remains constant

6- The ……. Layer is much vacuumed layer.

a- Troposphere b- stratosphere c- mesoshhere

7- Ozone gas contains ……. Oxygen atoms.

a- one b- two c- three

8- One Dobson = …… mm

a- 0.01 b- 1 c- 3

8- Ozone hole increase in …….. every year.

a- August b- september c- october

9- Ozone hole appears over the ……...

a- north pole b- south pole c- equator

10- All the following causes' erosion of ozone layer except……..

a- CFCs b- nitrogen oxide c- nitrous oxide

11- ……radiation has thermal effect.

a- U.V b- Infrared c- Cosmic

12- ……radiation has chemical effect.

a- U.V b- Infrared c- Cosmic

⑩ Problems:

Problem no 1:

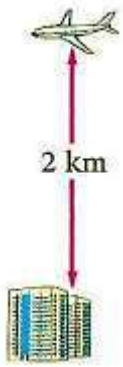
If the temperature at the base of mount Everest is 20.6 °C, how much is the temperature at its top if the mountain height is 8862 meter?

Problem no 2:

2) Calculate the height of a mountain if the temperature at its foot is 30 °C and at its top is – 6 °C.

Problem no 3:

Calculate the height of the building if you know that the temperature recorded at airplane is 3°c and temperature that recorded at earth surface is 19.25°c.



Problem no 4:

Calculate the difference in temperature between two points A & B , if their height above sea level are 8 & 10 respectively.

Problem no 5:

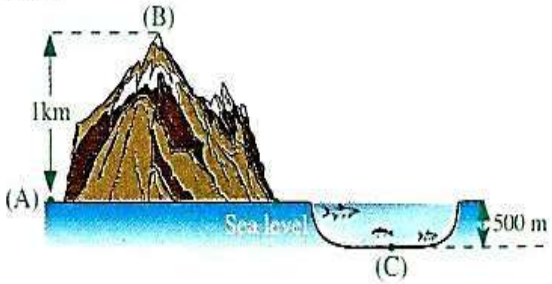
If the temperature at sea level is 24.5°c, calculate the temperature at point located below tropopause by 5 kilometers.

Problem no 6:

From the opposite figure, calculate the temperature at :

a. Point (B) if the temperature at point (A) = 26.5°C

b. Point (C) if the temperature at point (B) = 10.25°C

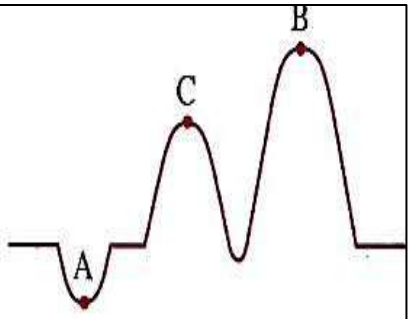


Problem no 7:

Calculate the height of the point (C) from the point (A).

If you know that :

- The temperature at point (A) = 24°C.
- The temperature at point (B) = 5°C.
- The height of point (B) from point (C) = 2 km.



9 Give reason for:

1. **As height increase, atmospheric pressure decrease.**

   Due to the decrease of air column.

2. **Troposphere is called disturbed layer.**

   Because most of the weather turbulence take place in it.

3. **The air movement in troposphere is vertical.**

   Because hot air of low density goes up while cold air of high density falls down.

4. **The lower part of stratosphere is suitable for flying planes.**

   Because it doesn't contain clouds or any weather disturbances and the air moves in this part is horizontally.

5. **Mesosphere layer is much vacuumed.**

   As it contains only a limited amount of helium and hydrogen gases.

6. **Meteors burn in mesosphere layer.**

   Due to friction with air molecules.

7. **The thermosphere is the hottest layer.**

   Because the temperature increases rapidly by going up in this layer until it reaches 1200˚C at the end of this layer.

8. **Ozone layer is formed in the stratosphere.**

   Because it contains a suitable amount of oxygen gas.

9. **Ozone layer act as a protective shield for living organisms.**

   Because it does not allow penetration of all far and medium ultraviolet radiations, which have very harmful effects.

Science
Pre.2
Term 1
2022

Unit 3

Droos Science

Mr. Ahmed Omara

Droos science

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Revision on unit 3

1 Write the scientific term:

1- Traces & remains of old organisms preserved in sedimentary rocks. ( )

2- Solidified resinous matter secreted by pine trees in old ages. ( )

3- Fossils formed as a result of the rapid burying of an old organism as soon as it died in a medium preserve it form decomposition. ( )

4- It is the replica carrying the internal details of a dead old organism. ( )

5- It is the replica carrying the external details of a dead old organism ( )

6- They are fossils, in which minerals replace the organic matter of the living organism part by part. ( )

7- They are fossils; in which silica replace wood of the tree part by part leaving the shape without any change. ( )

8- Process of replacing wood by silica part by part ( )

9- Fossils that had lived for a short period of time then extinct. ( )

10- The sequence of fossils in sedimentary rocks according to their appearance from simple to complicated. ( )

11- It is the continuous decrease without any compensation in the number of living organisms until all members of species die out. ( )

12- It's a path of energy from a living organism to another. ( )

13- It is a group of food chains connected together in ecosystem. ( )

14- Ecosystem that has few members and it is strongly affected by the absence of one of one species. ( )

15- Ecosystem that has multiplied members and it is not affected by the absence of one of one species. ( )

16- Save areas established to protect endangered species. ( )

❷ Give an example for:

1- Trace.	
2- Remain.	
3- Fossils of complete body.	
4- Cast.	
5- Mold.	
6- Petrified fossils.	
7- Link between reptiles and birds.	
8- Indicate that Mokattm Mountain was sea more than 35 million years ago.	
9- Indicate the climate was hot or rainy.	
10- Indicate that their environment was clear warm shallow seas	
11- Microfossils	
12- Extinct animal in old time.	
13- Extinct animal in recent time.	
14- Extinct bird.	
15- Endangered animal.	
16- Endangered bird.	
17- Endangered plant.	
18- Simple ecosystem.	
19- Complicated ecosystem.	
20- Natural protectorate.	

❸ What is the importance of:

1- Fossils.	
2- Index fossil	
3- Fossil record	
4- Nummulites	
5- Fern fossil	
6- Coral fossils	
7- Microfossils	
8- Natural protectorate	
9- Yellow stone protectorate	
10- Panda protectorate	
11- Ras mohammed protectorate	
12- Wadi hetan protectorate	

❹ Compare between:

Point of comparison	Trace	Remain
Definition		
Examples		

Point of comparison	Mold	Cast
Definition		
Examples		

Point of comparison	Simple ecosystem	Complicated ecosystem
Definition		
Members		
Absence of one species		
Example		

5 Choose the correct answer:

1- Fossils are found in …….. rocks.

a- igneous b- sedimentary c- volcanic

2- Complete body fossils of mammoth preserved in ……

a- amber b- ice c- silica

3- Complete body fossils of insect preserved in ……

a- amber b- ice c- silica

4- All of these are mold fossil except ……

a- Ammonite b- trilobite c- amber

5- When a plant leaf falls on soft sedimentary rock it forms ……. fossil.

a- petrifies b- cast c- mold

6- Dinosaur …….. is example for petrified fossil.

a- tooth b- foot print c- skull

7- Archaeopteryx is a link between ……. & ……..

a- reptile & mammal b- reptile & bird c- bird & mammal

8- …… is example for microfossils.

a- Trilobite b- Foraminifera c- Ammonites

9- …….. indicates extinction.

a- Fossils b- Overhunting c- Glacial age

10- All of these are reason of old extinction except ……..

a- Meteorite b- Overhunting c- Glacial age

11- All of these are reason of recent extinction except ……..

a- Meteorite b- Overhunting c- Glacial age

12- All of these are extinct species except ……..

a- dodo bird b- bald eagle c- quagga

13- All of these are endangered species except ……..

a- mammoth b- ibis bird c- rhinoceros

14- …… is the path of energy from living organism to another.

a- Food type b- Food web c- Food chain

15- ……. Protectorate is the 1st protectorate established in Egypt.

a- Ras mohammed b- Wadi hetan c- pyramids

16- ……. Protectorate protects the skeleton of whales.

a- Ras mohammed b- Wadi hetan c- pyramids

6 Choose odd word & mention scientific term of another:

a. Dinosaur foot print – Dinosaur skull – Worm tunnels

b. Dinosaur foot print – Dinosaur skull – shark tooth

c. Ammonite – trilobite – radiolaria

d. Dinosaur skull – Dinosaur tooth – Dinosaur eggs.

e. Foraminifera – radiolaria – Ammonites.

f. Environmental pollution – long glacial age – overhunting.

g. Overhunting – Meteorite impact earth – violent earth movement

h. Dinosaur – mammoth – quagga

i. Bald eagle – dodo bird – ibis bird.

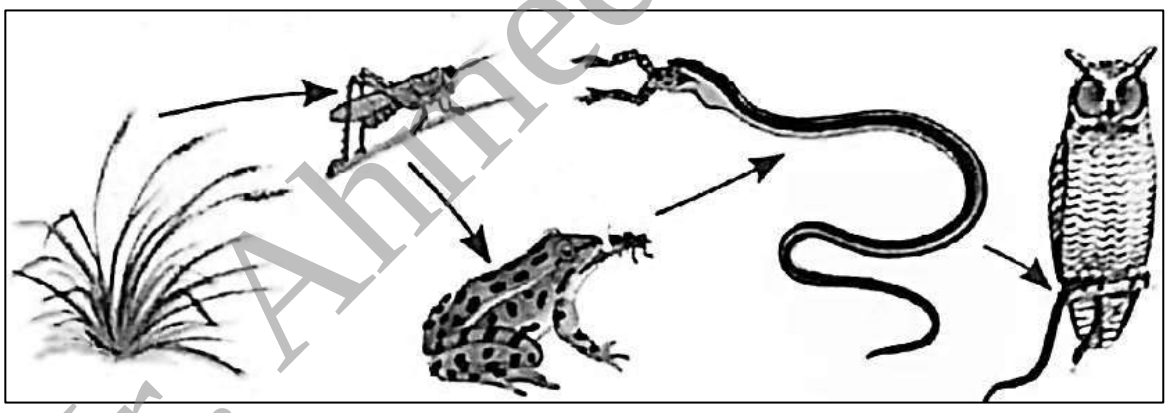
j. Quagga – panda bear – dodobird.

7 Complete the following:

1. Fossils are …… & ……. That preserved in ……..…. rocks.
2. …….. & ……. are examples of cast fossil.
3. …….. & ……. Are examples of mold fossil.
4. Mammoth was extinct from 25000 years ago by ……..
5. Amber is …… that secreted by pine tree in old ages.
6. …… & …… are example for petrified fossil.
7. ……. is old organism that lived for short time then extinct.
8. …….. is a link between reptiles & birds.
9. Life start in …… then established on …….
10. Organisms developed from ……. to …….
11. In plant world gymnosperm comes ……. angiosperm.
12. In plant world Mosses comes ……. algae.
13. In animal world Mosses reptiles ……. amphibians.
14. …… & …….. are examples for microfossils.
15. …… Indicate extinction.
16. …….. & … …….. are reason for old extinction.
17. …….. & …….. are reason for recent extinction.
18. …… is non-flying bird that extinct in recent time.
19. …… is a mid-way between horse and zebra.
20. ……. & …….. are extinct species in old time.
21. ……. & …….. are extinct species in recent time.
22. ……. & …….. are endangered birds.
23. Pharaohs used …… in writing papers.

24. …… is example for simple ecosystem that characterized by having …….. members & …… affected by absence of one species.
25. …… is example for complicated ecosystem that characterized by having …….. members & …… affected by absence of one species.
26. …….. is the first protectorate in Egypt.
27. Ras mohammed protectorate protect ……..&……
28. Wadi hetan protectorate protect ……..……
29. Yellow stone protectorate in ……. Protect ……
30. Panda protectorate in ……. Protect ……

8 The opposite figure represents food chain:



a. <u>What is happened to snake in the absence of frog?</u>

b. <u>What is happened to frogs in the absence of snake?</u>

⑩ Give reason for:

1. **Worm's tunnels and dinosaur's footprint are considered trace.**

   Because they indicate the activity of once an old living organism during its life.

2. **Shark's teeth are considered fossil remains.**

   Because they indicate the remains of once an old shark after death.

3. **Snow was a good medium for mammoth.**

   Because it preserves the body of mammoth from decomposition.

4. **Amber was a good medium for insect.**

   Because it preserves the body of insect from decomposition.

5. **Ammonite is mold fossil.**

   Because it is a replica that carry internal details of old living organism.

6. **Formation of petrified woods.**

   Because the silica replaced the wood material part by part.

7. **Index fossils indicate the age of sedimentary rocks.**

   Because the age of rocks is the same the age of fossils existed in them.

8. **Studying fossil record is very important.**

   Because it indicates the extinction and evolution of organisms.

9. **Microfossils have great importance.**

   Because they are a good indication of age of rocks from which they were taken and the suitable conditions for petroleum formation.

10. **Desert ecosystem is significantly affected by the absence of one of its species.**

    Due to the rarity of the alternatives that compensate this absence.

11. **Simple ecosystem is not affected by the absence of one of its species.**

    Because it has many alternatives.

اللهم إنى أستودعك ما قرأت و ما فهمت و ما حفظت فرده لى عند حاجتى له إنك على كل شئ قدير.

Unit (1) – Lesson (1)

"Attempts of Elements Classification"

1. Mendeleev's periodic table:

He arranged (67) elements in an ascending order according to their atomic weights.

Advantages of Mendeleev's periodic table:

1- He left gaps for discovery of new elements.

2- He corrected wrong atomic weights of some elements.

Disadvantages of Mendeleev's periodic table:

1- He made a disturbance in ascending order of atomic weights of some elements to put them in groups that suit their properties.

2- He had to deal with the isotopes of one element are different elements due to the difference in their atomic weights So he had to put more than one element in one place.

Rutherford: discover the positively charged protons inside the nucleus.

2. Moseley's periodic table:

1- He arranged elements in an ascending order according to their atomic numbers.

2- He added (0) group which includes inert (noble) gases.

3- He specified a place below the table for lanthanides and actinides elements.

Bohr: discovered the main energy levels of the atom (7 in the heaviest atom).

3. Modern periodic table:

- Scientists discovered that each main level contains other levels (energy sublevels).

- Elements are classified in the Modern periodic table according to:

1- Their atomic number. 2- The way of filling the energy sublevels with electrons.

The modern periodic table:

- It consists of (7) horizontal periods – (18) vertical groups.

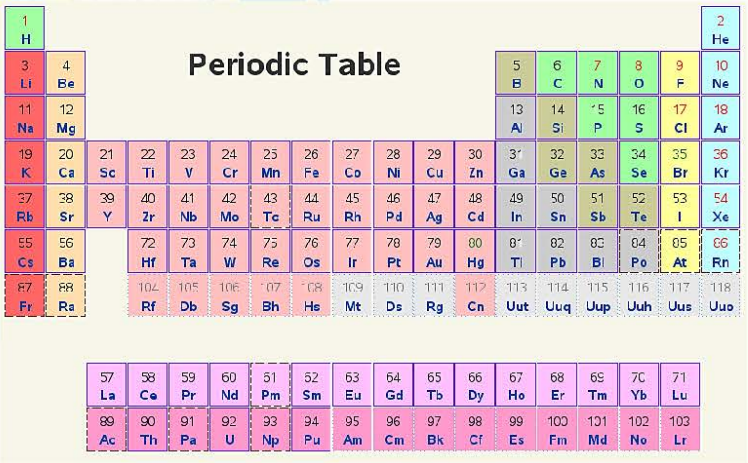
- The number of known elements till now is (118), 92 of them are abundant, while the rest prepared artificially.

- The elements are classified into 4 blocks (s, p, d, f).

Notes:

1- The number of energy levels indicates the period number.

2- The number of electrons in outermost energy level indicates the group number.



- **Elements of the same group are:**

- Similar in chemical properties, because they have the same number of electrons in outermost energy.

- Different in the number of energy levels.

- **Elements of the same period are:**

- Different in chemical properties, because they don't have same number of electrons in outermost energy level.

- Similar in the number of energy levels.

- **Choose the correct answer:**

1- The number of known elements till now is .....

a- 216

b- 118

c- 316

d- 16

2- The scientist ..... had discovered the main energy level.

a- Moseley

b- Bohr

c- Hofmann

d- Rutherford

3- The scientist who discovered the positive proton in the nucleus is.....

a- Moseley

b- Bohr

c- Mendeleev

d- Rutherford

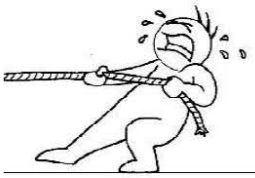
4- The scientist who left gaps in his table is .....

a- Moseley

b- Bohr

c- Mendeleev

d- Rutherford



Electronegativity

Power to Attract Electrons

5- Elements in the P-block are called.....

a- transition elements.

b- Lanthanides.

c- actinides.

d- noble gases

6- The element which occupy the middle block (d) in the periodic table are called .....elements.

a- transition

b- alkali

c- noble gases

d- halogens .

7- The inert gas which has the same electronic structure of sodium ion (Na^+) is.....

a- $_{10}Ne$

b- $_{2}H$

c- $_{18}Ar$

d- $_{17}Cl$

8- The transition elements starts to appear from the beginning of the..... period.

a- second

b- third

c- fourth

d- fifth

9- The element which located in period (3) and group (3A) is.....

a- $_{13}Al$

b- $_{5}B$

c- $_{11}Na$

d- $_{15}P$

10- The element that lies in the same period with $_{12}Mg$ is .....

a - $_{7}N$

b- $_{15}P$

c- $_{20}Ca$

d- $_{3}L$

11- Lanthanides and actinides are located in ..... block.

a- s

b- p

c- d

d- f

12- An element $_{18}X$ is located in... ..... block.

a- s

b- p

c- d

d- f

13- The atomic number of an element that lies in period (4) and group (2A) is.....

a- 4

b- 18

c- 20

d- 10

- **Complete the following:**

1- Mendeleev arranged the element in an ascending order according to..... , while Mosley arranged them in an ascending order according to .....

2- Mosley located ..... And .....elements below his table.

3- .....block is located in the middle of the modern periodic table.

4- Element of s-block are located on the ..... of the periodic table.

5- The modern periodic table consist of ..... horizontal periods and .....vertical groups.

6- The scientist ..... discovered the main energy levels.

7- An element **(Z),** its atomic number is 20 , so it locates in group ..... and period ..... .

• Write the scientific term:

1- Elements of group zero in the modern periodic table. (.....)

2- They are indicted by the letter K, L, M, N,O (.....)

3- The number of electrons rotate in energy levels around the nucleus. (.....)

4- The block which contain group (1A) and (2A) in the periodic table. (.....)

5- Elements which occupy the middle block (d) in the periodic table. (.....)

6- It is the number of protons inside the nucleus. (.....)

7- A scientist that arranged the elements in an ascending order according to their atomic number.
(..... .....)

• Correct the underlined words:

1- **Mendeleev** discovered that the nucleus of the atom is positively charged.

2- **Rutherford** discovered the main energy levels.

3- Moseley put lanthanides and actinides **on the left side of the periodic table.**

4- **Moseley** arranged the elements ascending according to their atomic weight.

- **Locate the position of an element that its atomic no. is 17 , then:**

- find the atomic number of the element above it in the same group.

……

-write the name of the group in which both of them are present.

……

- **Write down the electronic configuration of the following elements then mention their group number and period number.**

- $_{9}F$ $_{19}K$ $_{10}Ne$ $_{15}P$ $_{17}Cl$ $_{20}Ca$ $_{2}He$

	electronic configuration	their group no	their period no
$_{9}F$			
$_{19}K$			
$_{10}Ne$			
$_{15}P$			
$_{17}Cl$			
$_{20}Ca$			
$_{2}He$			

Lesson (2)

"Graduation of the properties of elements in the Modern periodic table"

- The properties of elements in the Modern periodic table:

- Atomic size. - Electronegativity. - Metallic and none-metallic properties.

- **Atomic size:** The atomic radius is used to measure Atomic size and its measuring unit is picometre
- **Electronegativity:** It's the ability of the atom in covalent molecule to attract the electrons of the chemical bond towards itself.
- **Metals:** They are the elements which have less than four electrons in their outermost energy levels.
- **Positive ion:** Is an atom of metallic element losing an electron or more during the chemical reaction.
- **Nonmetals:** They are elements which have more than 4 electrons in their outermost energy levels.
- **Negative ion:** Is an atom of nonmetallic element gaining an electron or more during chemical reaction.
- **Metalloids:** They are elements which have the properties of both metals and nonmetals.

Notes:

1- The atomic size of an element decreases in periods.

- Due to the increase of the attraction force between the positive nucleus and outermost electrons.

2- The atomic size of an element Increases in groups.

- Due to the increase of the number of energy levels and decrease of attraction force.

3- Metals tend to lose the outermost electrons and changes into positive ion.

4- The electronic configuration of (Na+), (Mg+2) and (Al+3) is similar to the nearest inert gas (Ne10).

5- **Basic oxides**: They are metallic oxides, some of them dissolve in water giving alkaline solutions. Their solutions (alkalis) turn litmus solution into blue.

6- Acidic oxides: They are nonmetal oxides, some of them dissolve in water giving acids. Their solutions (acids) turn litmus solution into red.

7- The chemical properties of metals :

1-Some metals react with dilute acids forming salt of acid and hydrogen gas

$$Mg + 2HCl \longrightarrow MgCl_2 + H_2 \uparrow$$

Magnesium + Hydrochloric acid ⟶ Magnesium chloride+ Hydrogen

2-Metals react with oxygen forming metallic oxides which are known as basic oxides.

$$2Mg + O_2 \longrightarrow 2\,MgO$$

Magnesium + Oxygen ⟶ Magnesium oxide

3- Basic oxides which dissolve in water form alkalis:

$$MgO + H_2O \longrightarrow Mg(OH)_2$$

Magnesium oxide + Water ⟶ Magnesium hydroxide

- (K) Potassium and (Na) Sodium React instantly with water and H_2 evolves.
- (Ca) Calcium and (Mg) Magnesium React very slowly with cold water.
- (Zn) Zinc and (Fe) Iron React in high temperature with only hot water vapour.
- (Cu) Copper and (Ag) Silver Don't react with water.

8- The chemical properties of nonmetals :

1- Nonmetals don't react with the acids.

2 Nonmetals react with oxygen forming non-metal oxides. Most of them are known as acidic oxides.

$$C + O_2 \longrightarrow CO_2$$

Carbon + Oxygen ⟶ Carbon dioxide

3-The nonmetal oxide dissolves in water forming acids.

$$CO_2 + H_2O \longrightarrow H_2CO_3$$

Carbon dioxide + Water ⟶ Carbonic acid.

• Choose the correct answer:

1- Each period in the periodic table starts with a/an .....Element.

a- Semi-metallic

b- inert gas

c- non metallic

d- metallic.

2- When sodium reacts with water , ...gas evolves.

a- Co_2

b- H_2

c- O_2

d- d- N_2

3- Burning of carbon in the air produce.....

a- CO

b- CO_2

c- CaO

d- C

4- Which of the following is a metalloid?.....

a- sodium

b- iron

c- silicon

d- fluorine

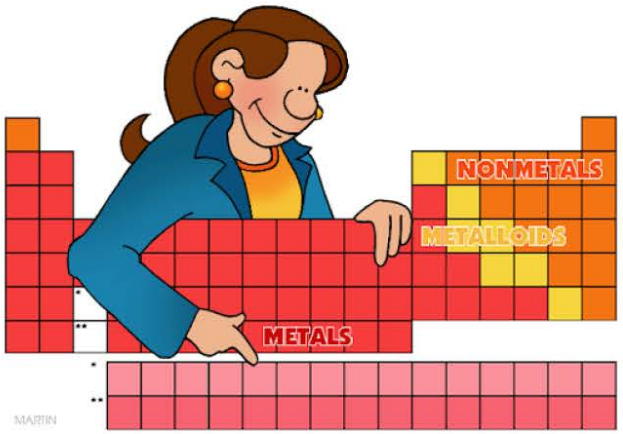
5- The strongest metal lies in group .....

a- (0) group

b- (1A)

c- (1B)

d- (7A)



6- Metal oxides are ..... oxides.

a. basic

b. acidic

c. neutral.

d. normal

- **Put (√) or (x) :**

1- The metallic property in group (1A) increases as we go from up to down. (.....)

2- Metallic property of the same group increases by the increase of the atomic number. (.....)

3- The atomic size increases in the same group by increasing the atomicnumber. (.....)

4- Solutions of nonmetal oxides turn the violet litmus solution into red. (.....)

3- Water and ammonia are from polar compound. (.....)

- **Complete the following:**

1- During the chemical reaction, metal atom tends to ..... electrons and changes into .....ion.

2- In the group , by increasing the atomic number , the atomic size..... .

3- As the atomic number increases in the same period, the nonmetallic property.....

4- Each period in the modern periodic table starts with..... element and ends with .....elements.

5- The elements that have the properties of metals and nonmetal are called.....

6- Sodium oxide is from ..... Oxides, while carbon oxide is from.....Oxides.

7- nonmetals Oxides dissolve in water giving ..... which turn the litmus solution into .....

8- Metals are arranged in ..... order according to their.....in the chemical activity series.

9- Sodium oxides is from .....oxides.

10- $MgO + H_2O \longrightarrow$ .....

11- Magnesium reacts with hydrochloric acid giving .....and.....

12- The measuring unit of atomic size of atom is.....

- **Write the scientific term:**

1- It is the measuring unit of the atomic size of element. (.....)

2- A kind of elements in which their valence electrons contain more than 4 electrons. (.....)

3- A kind of elements in which their outermost energy level contains less than 4electrons. (.....)

4- Elements react with oxygen forming acidic oxides. (.....)

5- An atom of metallic element which loses one electron or more during the chemical reaction.(.....)

6- The substances which have some properties of metals and some properties of nonmetals(.....)

7- A group contains the strongest nonmetal. (.....)

8- The ability of the atom in the covalent molecule to attract the chemical bond electrons to it.
(.....)

9- Elements which have the properties of metals and nonmetals. (.....)

10- A series in which metals are arranged in a descending order according to their chemical activity
(.....)

11- Elements react with oxygen forming acidic oxides. (.....)

12- The oxides that turn litmus paper into red. (.....)

- **Give reason for:**

1- In periods by increasing the atomic number, the atomic size decrease.

.....

2- Sodium is kept under kerosene surface.

.....

3- Atomic size increase from up to down in the group.

.....

- **Write the balance chemical equations for the following :**

1- Reaction of magnesium with diluted hydrochloric acid.

.....

2- Reaction of carbon dioxide with water.

.....

3- Reaction of magnesium oxide with water.

.....

4- Burning magnesium in oxygen.

.....

5- Reaction of copper with hydrochloric acid.

.....

- **How can you differentiate between each of the following?**

- Coal and magnesium, (using HCl)

.....

.....

- Calcium oxide solution and sulphur trioxide solution.
- .....
- .....

- **Compare between**

1. Basic oxides and acidic oxides:

basic oxides	acidic oxides

2. Metals and nonmetals:

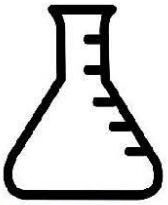
Metals	nonmetals

Science practicals

Activity 1 "Discovering the chemical properties of metals"

Tools:

1. **Water**
2. **Magnesium Strip**
3. **A jar filled with oxygen**



4. **Test tube**

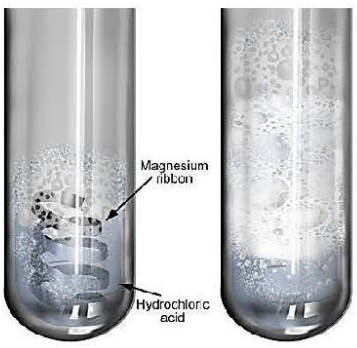
5. **Dilute hydrochloric acid**

Step 1: Put a part of magnesium strip in a test tube and add some dilute (HCL)

Observation:

- Do magnesium react with the acid? How can you detect?

.....



Step 2: Heat another piece of magnesium strip till glowing, put in a jar filled with oxygen

Step 3: Add some water to the jar with shaking

Observation:

- Do magnesium oxide dissolve in water?

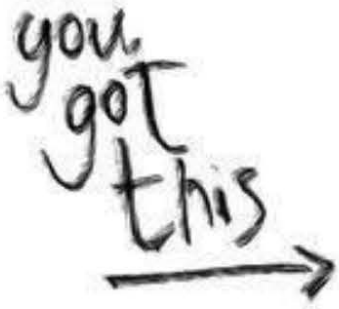
  ……

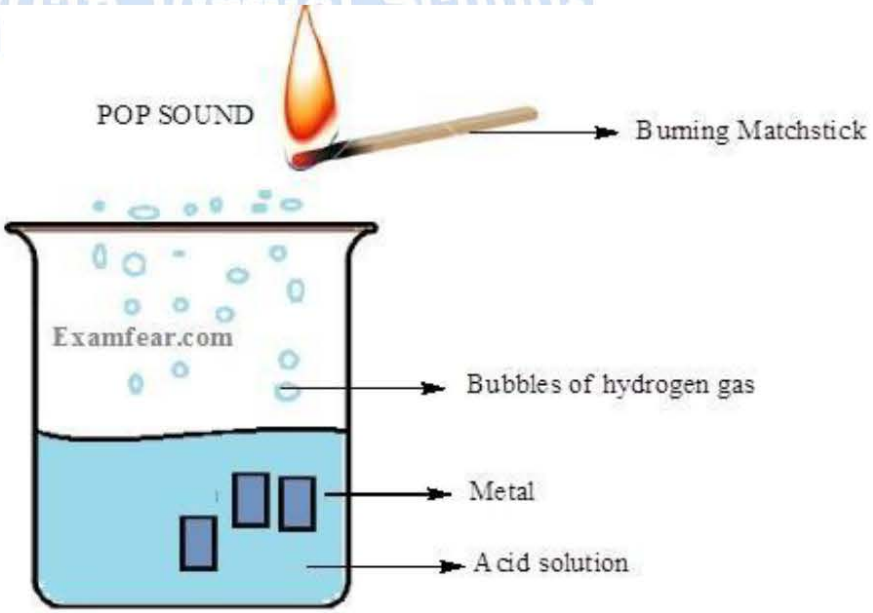
- What is the effect of adding drops of violet litmus solution to this solution?

  ……

- Write your conclusion, support your answer with equations

  ……

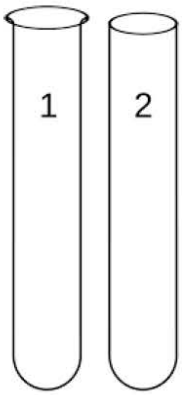




Activity 2 "Discovering the chemical properties of nonmetals"

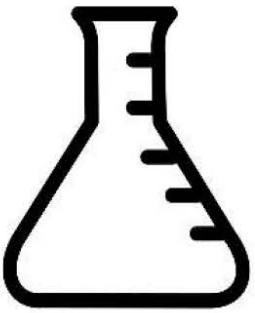
Tools:

1. **Water**
2. **Burning spoon**
3. **2 pieces of coal (carbon)**



4. **2 test tubes**

5. **Dilute hydrochloric acid**



6. **A jar filled with oxygen**

Step 1: Put a piece of carbon in a test tube and add some dilute (HCL)

Observation:

- Does a reaction take place between carbon with the acid?

  .....

- Write the conclosion.

  .....

  .....

  .....

Step 2: Heat another piece of carbon in burning spoon till it burns, then put in a jar filled with oxygen

Step 3: Add some water to the jar with shaking.

Observation:

- What is the effect of adding drops of violet litmus to the formed solution?

  .....

  .....

  .....

- Write your conclusion, support your answer with equations

  .....

  .....

  .....

  .....

Lesson (3)

"Main Groups in the Modern Periodic Table"

From the main groups in the modern periodic table:

1. Alkali metals group (Group 1A) :

- Group 1A lies in the maximum left of the periodic table, their metals are named alkali metals because they react with water forming alkali solutions.

$$2\,Na + 2\,H_2O \longrightarrow 2NaOH + H_2\uparrow$$

General properties of alkali metals :

-They are mono-valent elements because their outermost shells contain (1) electron.

-They tend to lose their valency electron forming positive ions that carries one positive charge.

-They are chemically active elements so they are kept under kerosene or paraffin to prevent their reaction with the moist air.

-Their chemical activity increases by the increase of atomic size.

"Cesium (Cs) is considered as the most active metal in general."

- They are good conductors of heat and electricity.

-Most of them have low density.

2. Halogens group (7A)

- Group (7A) lies on the right side of the periodic table, it is one of (p) block groups.
- They are salts formations, because they react with metals forming salts.

$$2K + Br_2 \longrightarrow 2KBr$$

Potassium + Bromine ⟶ Potassium bromide

General properties of halogen elements:

-They are mono-valent nonmetals.

-They exist as diatomic molecules F_2 , Cl_2 , ...etc

-They are chemically active elements, so they do not exist individually in nature but they exist in chemical compounds, except astatine which is prepared artificially.

- Each element in the group replaces the element below it in their solutions.

$Cl_2 + 2KBr \longrightarrow 2KCl + Br_2$

Clorine + Potassium bromide ⟶ Potassium chloride + Bromine

$Br_2 + 2KI \longrightarrow 2KBr + I_2$

Bromine + Potassium Iodine ⟶ Potassium bromide + Iodine

-The physical state is graduated from the gaseous state (Fluorine, Chlorine) to the liquid state (Bromine) to solid state (Iodine).

3. Inert gases (group 18)

- It is the last group in p-block

General properties of inert gases:

- They present in gaseous state, they are chemically inactive elements as their outermost energy level saturated by 8 electrons except He which contains 2 electrons.

- The properties of elements and their uses

1-**Sodium** is used in liquid state in transferring heat from inside the nuclear reactor to outside.

2-**Silicon** slides are used in the manufacture of computers because they are semiconductors.

3-**Liquified nitrogen** is used in preservation of the cornea of the eye because it has a low boiling point.

4-**The radioactive cobalt 60** is used in food preservation because gamma rays which come out from it prevent the reproduction of microbial cells without an effect on human.

- **Choose the correct answer :**

1- ..... is considered from halogens.

a- sodium

b- chlorine

c- Helium

d- calcium.

2- .....form positively charged ions when they enter any chemical reaction.

a. inert gases

b. alkali metals

c. Halogens

d. nonmetals.

3- ..... used as semi-conductors in computers.

a- silicon slides

b- cobalt 60

c- liquefied nitrogen

d- sodium

- **Put (√) or (x) in front of each element:**

1- The alkaline metals are good conductors of heat and electricity. (.....)

2- Halogens are monovalent elements. (.....)

3- Iron and copper are inert gases elements . (.....)

4- Chlorine is found in a solid state. (.....)

5- Liquefied Nitrogen is used in preservation of cornea. (.....)

- **Complete the following:**

1 -elements of group (1A) are named as.....and they are from.....block elements.

2-the valence of element in group (7A) is..... As they tend to .....electron.

2- Sodium is kept under the surface of ..... to prevent it from reaction with .....

3- The element of group (17) are called....., while the element of group (18) are called.....

4- $2Na + Cl_2 \longrightarrow$ .....

- **Write the scientific term :**

1- The halogen which exist in a solid state. (.....)

2- An element used to preserve tissue as eye cornea. (.....)

3- A liquid metal acts as a heat conductor in nuclear reactors for generating electricity. (.....)

- **Give reason for:**

- Sodium fires don't put off with water.

.....

-Elements of group (1A) are known as alkali metals.

.....

-Halogens do not exist in the elementary state.

.....

- **Mention some properties for halogens.**

.....

.....

.....

.....

- **Write the balanced chemical equations for the following :**

1- Reaction of sodium with water

.....

2- Reaction of chlorine gas with potassium bromide solution

.....

3- Reaction of bromine with potassium iodide

.....

4- Reaction of chlorine with potassium bromide.

.....

- **Compare between:**

Element of group (1A) and group (7A): Related to (name-valency- kind of formed ion)

	Element of group (1A)	**Element of group (7A)**
name		
valency		
formed ion		
Examples		

Science practicals

Activity 3 "Discovering the chemical properties of alkali"

Substances and Tools:

A piece of sodium	A piece of potassium	Basin	Water

Step 1: Take out a piece of Sodium from the kerosene in which Sodium is kept.

Step 1: Put the sodium carefully in the water basin.

Step 1: repeat the previous steps with Potassium.

Observation:

Why Na and K are kept under kerosene?

.....

.....

Which is stronger in reaction with water Na or K ?

.....

.....

Write your conclusion.

.....

.....

Lesson 4

"Water"

Structure of water molecule:

- Combination of one oxygen atom with two hydrogen atoms by two single covalent bonds, its angle is 104.5
- Water molecules linked together by hydrogen bond as oxygen has higher electronegativity than hydrogen.

Hydrogen bond: it's a weak electrostatic attraction force between the molecules of polar compounds.

Properties of water: A- Physical properties:

1- **State:** solid (ice) – liquid (water) – gaseous (water vapour).

2- **Good polar solvent:**

- Dissolve most ionic compounds as table salt (sodium chloride).
- Dissolve some covalent compounds as sugar as it forms hydrogen bonds with it.
- Can't dissolve some covalent compounds as oil as they can't form hydrogen bonds with water.

3- Pure water boils at 100°C and freezes at 0°C , Due to presence of hydrogen bonds between molecules.

4- Density decreases on freezing as when the temperature of water decreases than 4°C, as water molecules are collected together by hydrogen bonds forming ice crystals which have hexagonal shape, large volume and large number of spaces between them.

- Ice crystals float on the water surface and this helps in the preservation of the life of aquatic creatures.

B- Chemical properties: 1- Water has a neutral effect on litmus paper.

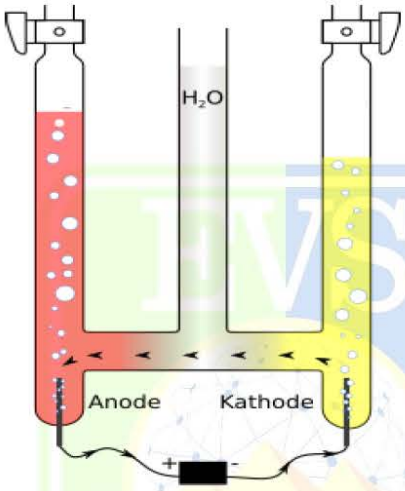
2- Water electrolysis: acidified water decomposes by electricity into:

- Oxygen: evolves at Anode, as oxygen ions are negatively charged which makes more glowing.
- Hydrogen: at Cathode, as hydrogen ions are positively charged and burns with blue flame & pop sound.
- The volume of hydrogen gas evolved is greater than that of oxygen (ratio between them is 2:1).
- Hofmann's voltammeter: used for the electrolysis of acidified water.

- Note: We add drops of dilute sulphuric acid to water during electrolysis as pure water is a bad conductor of electricity.

Activity 4 "Electrolysis of water"

- **Write the name of the following apparatus that is used in Electrolysis of water process.**



……

Observation:

1- What is the ratio between the volume of gas evolved over cathode and the gas evolved over anode?

……

2- Write the names of these two gases, how do you know?

……

3- Why we add a few drops of dilute sulphuric acid to water during its electrolysis by this apparatus?

……

4- Write your conclusion, support your answer with equations

……

- Calculate the volume of the gas evolves at the positive pole if the volume of the gasat the negative pole is 20 cm^3?

……

- **Choose the correct answer:**

1- The volume of hydrogen gas evolving from water electrolysis equals.....the volume of oxygen gas.

a- that of

b- double

c- half

d- four times

2- The type of bond between water molecules is .....bond.

a- metallic

b- ionic

c- hydrogen

d- covalent.

3- The density of pure water in solid state is.....

a- less than its density in liquid state.

b- equal to its density in liquid state.

c- equal to its density in gaseous state.

d- greater than its density in liquid state.

4- In the electrolysis of acidified water by using Hofmann's Voltammeter, the volume of hydrogen gas that evolves is ($40cm^3$) , so the volume of oxygen gas that evolves is .....cm^3

a- 80

b- 40

c- 20

d- 10

5- Increasing the concentration of .....in drinking water causes blindness.

a- lead

b- arsenic

c- mercury

d- chlorine

- **Put (√) or (x) in front of each element:**

1-Hofmann's Voltammeter is used for water ionization. (.....)

2- The pure water has a neutral effect on the litmus paper. (.....)

3- Water and ammonia are from polar compounds. (.....)

- **Complete the following :**

1- There are..... bond in water molecule.

2- The bond between hydrogen atom and oxygen atom in water molecule is .....bond while bonds among water molecules are ..... bonds.

3- Water can dissolve .....compounds that can form .....bonds with water.

4- Water is a good polar .....as it has the ability to dissolve most..... Compound.

5- Increasing the concentration of mercury in drinking water causes .....,while ..... increases the infection rate by liver cancer.

- **Give reason for:**

1- Water is a good polar solvent.

.....

2- Although sugar is a covalent compound, it dissolve in water.

.....

- **What happen when?**

1-Storing water in plastic water.

.....

2-drinking water rich in mercury.

.....

Unit (2) / Lesson (1)

"The Atmospheric Layers"

- **Earth is surrounded by a gaseous envelope.**

Atmospheric envelope:

"Gaseous envelope rotates with earth around its axis and extends to 1000km above sea level."

Atmospheric pressure:

"It's the weight of air column of an atmospheric height on a unit area (1m).

- Atmospheric pressure unit: bar – millibar.

Normal Atmospheric pressure: It's the atmospheric pressure at sea level and it equals 1013.25 mb.

The instruments of measuring the Atmospheric pressure: barometers

1- Aneroid: determines the possible day weather.

2- Altimeter: measure the elevation from sea level.

Isobar: It's the curved lines that joins the points of equal pressure in atmospheric pressure maps.

- The wind moves from the areas of high Atmospheric pressure to the areas of low Atmospheric pressure.

Layers of atmospheric envelope:

1- Troposphere: (disturbed layer) as all atmospheric turbulence (rains, wind, and clouds) happens in it.

- Extends for 13km above sea level.
- Temperature decreases with a rate (6.5°C) for (1km) height till reaches (-60°C) at tropopause.
- Air movement is vertical: hot air (of less density) move up and cold air down.

2- Stratosphere: (ozonic layer): it Extends from 13km to 50km (thickness of 37km).

- Pilots prefer to fly in this layer as lower part doesn't contain clouds or weather disturbances and the air movement is horizontally.
- Stratosphere is important for man's life as it contains ozone layer which absorbs harmful ultraviolet radiations emitted from sun and it's convenient for flying of planes.

3- Mesosphere: (coldest layer).

- Extends from 50km to 85km (thickness of 35km).
- Temperature decreases till reaches (-90 c°) so, it's called the coldest layer.
- Protects the earth planet from rock masses that enters the atmospheric envelope, where they burn as a result of their friction with air molecules forming luminous meteors.

4- Thermosphere: (hottest layer)

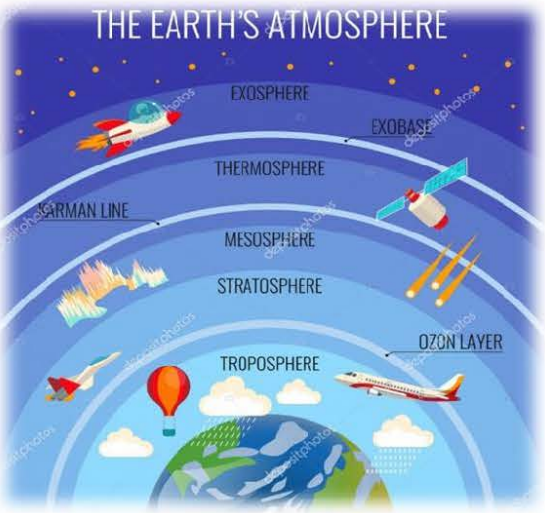
- Extends from 85km to 675km (thickness of 590 km).
- Temperature increases till 1200°C so, it's called thermal layer.
- Upper part contains charged ions extends up to 700km so, this part is known as ionosphere
- **Ionosphere layer:** it contains charged ions and it has an important role in wireless communications.
- Ionosphere layer is very important in wireless communications and broadcast as it reflects radio waves transmitted by radio stations and communication centers.
- **Van-Allen belts:** play an important role in scattering harmful charged cosmic radiations away from the earth.
- This scattering causes the occurrence of **Aurora phenomenon.**

Van-Allen belts: two magnetic belts surround ionosphere and scatter harmful charged cosmic radiations.

Aurora phenomenon: phenomenon appears as brightly coloured light curtains seen from both poles of earth.

Exosphere layer:

It's a region in which the atmospheric envelope is inserted with outer space.



- **Choose the correct answer from statements between brackets:**

1- Normal atmospheric pressure equals ..... millibar.

(1013.25 / 76 / 1.013 / 760)

2- ..... is located between stratosphere and mesosphere.

(Tropopause / Stratopause / Mesopause / Thermopause)

1- Meteors burn in .....

(mesosphere / ionosphere / exosphere / stratosphere)

- **Give Reason:**

1- The lower part of the stratosphere is suitable for flying airplanes.

.....

2- Ionosphere is important for radio stations.

.....

- **Mention the importance of each of the following:**

1- Van Allen's Belts .....

2- Altimeter .....

3- Satellites .....

- **What is meant by each of the following ?**

1- Atmospheric pressure.

.....

2- The aurora phenomenon.

.....

Lesson 2

"Erosion of Ozone Layer and Global Warming"

Structure of ozone layer: composed of ozone gas, which consists of three oxygen atoms.

- Oxygen molecule (O2) absorbs ultraviolet radiation (UV), which causes break down of the bond between the two oxygen atoms giving two free oxygen atoms (2O).
- Each oxygen atom combines with oxygen molecule forming ozone molecule (O3).

Thickness of ozone layer:

- Dobson (English scientist): postulated that that the thickness of the ozone layer is compressed into 3mm.
- Dobson: measuring unit of the degree for ozone layer.
- 100 Dobson unit is defined as 1 mm.
- The natural degree of ozone is 300 Dobson units.

Importance of ozone layer:

There are 3 types of Ultra violet rays (UV) that differ in wavelength and effects:

1- Near UV: (UV-A): 100% penetrate ozone layer.

2- Medium UV: (UV-B): 95% don't penetrate (are absorbed by ozone layer).

3- Far UV: (UV-C): 100% absorbed.

Ozone layer:

Acts as a protective shield for living organisms against the harmful chemical effects of U.V. radiations.

- **Harmful effects:** when medium and far U.V. rays penetrate ozone layer
- **Erosion of Ozone layer:** Scientists noticed erosion of ozone layer above South Pole (Ozone hole).
- **Ozone hole:** Thinning or losing parts of ozone layer above the South Pole.
- The normal degree of ozone layer is 300 DU.
- If the degree of ozone reaches 150 DU the ratio of erosion of ozone layer is 50%.

Pollutants of ozone layer :

1- Chlorofluorocarbon compounds (CFCs): commercially known as Freon, it is used as:

- Cooling substance in air conditioning sets.
- Propellant substance in making foam backing.
- Solvent substance for cleaning electric circuits slides.

2- Methyl bromide gas: used as an insecticide to preserve stored agriculture crops.

3- Halons: used in fire extinguishers.

4- Nitrogen oxides: produced from the burning of fuel of ultrasound airplanes (Concorde).

Protecting the ozone layer:

1- Using of Chlorofluorocarbon compounds must be and find safer alternatives.

2- Stop producing the ultrasound Concorde as their exhausts affect the ozone layer.

Global Warming phenomenon:

Continuous increase in the average temperature of the Earth's near-surface air.

- The increase of the concentration of CO2 gas leads to the increasing of temperature.

Greenhouse gases:

1- Carbon dioxide gas.

2- Chlorofluorocarbon compounds.

3- Methane gas CH4

4- Nitrous oxide N2

5- Water vapour H2

The reasons of increasing CO2:

1- Fossil fuel burning.

2- Cutting trees.

3- Forests fires.

Greenhouse effect:

It's the trapping of infrared radiation in the troposphere due to the increase of the ratio of greenhouse gases which cause the increases of planet earth temperature.

The negative effects of global warming phenomenon:

1- Melting of snow of two poles: leads to increase sea level in seas which threats:

- Coastal areas as they could drown.
- Extinction of some polar animals like the polar bear and seals.

2- Severe climatic changes: the repeated occurrence of:

- Tropical hurricanes.
- Destructive floods.
- Droughs.
- Forests fires.

- **Replace each of the following statements by suitable scientific term:**

a) A molecule is formed from combining an atom of oxygen to a molecule of the oxygen.

b) Continuous increase of the average temperature of the air near the surface of the Earth.

c) Thinning or losing parts of ozone layer.

- **Give reasons for :**

a) Formation of Ozone Layer in the stratosphere.

.....

b) Stop using concord airplanes.

.....

C) Infrared radiation cannot penetrate the Earth's atmosphere.

.....

- **Write short note about the negative results of global warming.**

.....

.....

- **What is importance of ozone layer?**

.....

.....

- **What happens when overuse of Freon.**

.....

Unit 3 / Lesson 1

"Fossils"

Fossils: Traces and remains of old living organisms that are preserved in sedimentary rocks.

Trace : Traces of once an old living organism indicate its activity during its life.

Examples of traces: Worms' tunnels – Dinosaur's foot print.

Remains: Traces that indicate the remains of once an old living organism after death.

Examples of remains: Remains of shark's teeth – Remains of a dinosaur's skull.

- Types of fossils and ways of formation:

1- Fossil of complete body:

Burying of organism as soon as it died in medium preserves it from decomposition like:

A- Mammoth: It died and buried in snow.

B- Amber: Pine trees secretes resinous matter that covers insects, then solidified changed into amber.

2- Solid Mold: It's the replica of the internal details of a skeleton of once an old living organism like:

Ammonites fossil – Nummulites fossil – Trilobite fossil.

3- Cast: It's the replica of the external details of a skeleton of once an old living organism ilke:

Cast of ferns – Cast mold.

4- Petrified fossils : in which minerals replace organic matter of organism part by part leaving shape without change like: Dinosaur's tooth - Dinosaur's eggs – Petrified wood.

Suitable conditions for fossils formation:

1- Hard skeleton.

2- Burying dead organism immediately.

3- Suitable medium in which mineral material replaces the organic material.

Importance of fossils:

1- Age determination of sedimentary rocks.

Index fossil: they're fossils of organisms that had lived for a short period of time in the past and had a wide geographic distribution, then became extinct.

2- Figuring out the pale environment:

3- Studying life evolution:

Studying the fossil record showed that:

- Life started in sea.
- Organisms developed from simple to complicated as:
- Algae appeared before mosses and ferns.
- Angiosperms appeared before gymnosperms.
- Invertebrates (Corals- mollusks) appeared before vertebrates.
- Fish were the first vertebrates – Amphibians – Reptiles – Birds and Mammals appeared together.
- Archaeopteryx is a link between reptiles and birds.

4- Petroleum exploration.

- **Write the scientific term for each of the following statements:**

1- Remains of old organisms that lived in the past for a certain period and then became extinct.

2- Replacing, part by part, the wood material of trees by silica to form petrified woods.

- **Complete the following phrases:**

- Archaeopteryx represents the link between ..... and.....

- Fossils are used in ..... exploration and determining the age of.....

- ..... is an example of microfossils.

- Complete fossils of insects are found preserved in .....

- **Mention one example of each of the following:**

(1) Complete body fossil

.....

(2) Trace

.....

- **What is the difference between .....?**

(1) Remains and trace.

.....

(2) Mold and cast.

.....

Lesson 2

"Extinction"

Concept of extinction

The continuous decrease without compensation in the number of a certain species of living organisms until all members die out.

Factors causing extinction of species in old ages:

1- Meteorites that impact with Earth.

2- The violent Earth movement.

3- The onset of the long glacial age.

4- Poisonous gases emitted by active volcanoes.

Factors causing extinction of species recently:

1-Destroying natural habitat.

2-Overhunting.

3-Environmental pollution.

4-Climatic changes and natural disasters.

Examples of extinct species: **Mammoth,** It is called the grandfather of recent elephant

Dinosaurs, became extinct from 66 million years ago.

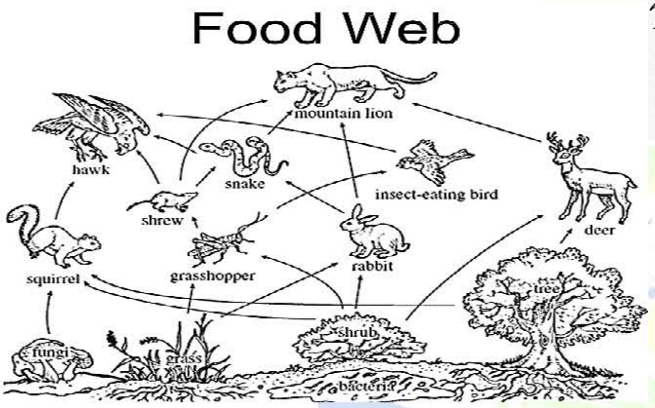
Dodo Bird and **Quagga**

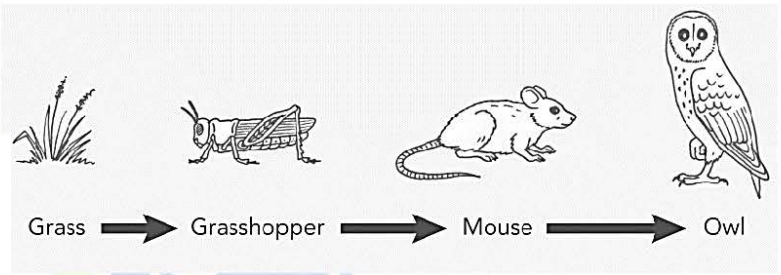
Examples of endangered species: Panda bear, Rhinoceros, Bald eagle, Ibis bird, and Papyrus plant.

Effect of extinction on the ecological equilibrium:

Food chain : It's the path of energy that transmits from a living organism to another in the ecosystem.

Food web: It is a group of food chains connected with each other.





Ecosystem is classified according to the degree of effect of extinction into:

	Simple ecosystem	**Complicated ecosystem**
Members	Few members	Multiple members
Effect	Severely affected by the absence of one specie because of the rarity of alternatives that compensates this absence.	It is not affected much by the absence of a specie because it has many alternatives.
Ex.	The Desert ecosystem.	The Tropical ecosystem

Ways to protect living organisms from extinction:

1. Issuing rules that control the hunting in land, seas, and air specially for the rare types.
2. Increasing the awareness about the importance of the natural life to sustain the existence of mankind.
3. Reproducing the endangered species and sending them back to their native habitat.
4. Establishing gene banks for those much endangered.
5. Establishing natural protectorates areas.

Natural protectorates:

Safe area established to protect the endangered species in their homeland.

The most recognized protectorates are:

1. **Bluestone in USA:** it protects the grey bear.
2. **Panda protectorate:** in northeast China.
3. **Ras Mohamed protectorate**: in Egypt, which contain different types of rare coral reefs.
4. **Wadi Hetan:** It is part of Wadi El-Raiyan protractorate in Fayoum.

- It contain complete whale skeleton fossils.

- **Mention the most important factors that cause species extinction now.**

.....

.....

.....

- **Give reasons:**

1. The desert ecosystem is affected severely by the absence of on specie.

.....

2. The extinction of dinosaurs.

.....

3. The dodo bird is an easy target to hunt.

.....

4. The ibis bird is considered as endangered species.

.....

5. Naming the bald eagle by this name.

.....

- **What happens in the following case:**

1. Hunting the panda in great numbers.

.....

.....

- **Mention one example of:**

1. Endangered bird: .....
2. Endangered plant: .....
3. Simple ecosystem: .....
4. complicated ecosystem: .....
5. Extinct bird: .....
6. Extinct animal: .....

- **Compare between simple ecosystem and complicated ecosystem**

simple ecosystem	complicated ecosystem

- **Mention some ways to protect living organism from extinction.**

.....

.....

Worksheet 1 [Lesson 1]

[1] – Complete the following:

1 – The most important attempts to classify elements are ----------,----------and ----------.

2 – In 1913, the New Zealand scientist ----------discovered that the nucleus of the atom contains ----------.

3 – The modern periodic table consists of -----Periods& ------ groups.

4 – Elements of p-block are located on the -------side of the periodic table and they are arranged in ----------groups.

5 – Element $_{13}X$ lies in period ---------- and group -------.

6 – In the modern periodic table, f-block includes ---------- and ----------which are located below the table.

7 – Elements of B are called ---------- elements and they start from period ----------.

8. Mendeleev arranged the elements ascendingly according to -------, while Mosely arranged them ascendingly according to ----------.

[2] Locate the position of the following elements in the modern periodic table:

1 – $_{7}N$ 2 – $_{17}Cl$

---------- ----------

3 – $_{6}C$ 4 – $_{10}Ne$

---------- ----------

[3] The following figure is for one of the periods of the modern periodic table. The symbols X, Y, and Z do not represent the real symbols of these elements answer the following:

X	$_{12}Mg$	Al	Si	P	Y	Z	$_{18}Ar$

A – Locate the position of element X and Y in the periodic table.

B – Mention the kind of elements X and Z.

---

[4] What is the scientific principle upon which the elements are arranged in:

1 – Modern periodic table

---

[5] Complete the table:

Element	$_{20}$ **Ca**	$_{15}$ **P**	$_{10}$ **Ne**
Electron configuration			
Energy levels			
Number of period			
No. of electrons in outer energy level			
No. of group			

Worksheet 2[Lesson 1]

Question (1):

A)-Complete the following statements:

1)-One of the advantages of Mendeleev's table is correcting the wrongly estimated ---------- of some elements.

2)-Mendeleev arranged the elements ascending according to ---------, while Moseley arranged them ascending according to ----------.

3)-Moseley located ------- and -------- elements below its table.

4)-Mendeleev discovered that the mass number (weight) of elements increase on moving from --------- side of the table to the -------- side in horizontal rows which were known later as ---------.

B)-Choose the correct answer:

1)-The number of elements in Mendeleev's periodic table is ------ elements. (92 – 116 -76 – 67)

2)-Elements are arranged in Moseley's periodic table in ascending order according to ----------.

(mass number – atomic number – valency)

3)-The nucleus of the atom contains ----------.

(positive electrons – negative protons – positive protons)

4)-The periodic table consists of ---------- horizontal periods.

(7 – 10 – 14 – 18)

5)-The periodic table consists of ---------- vertical groups.

(7 – 10 – 18 – 14)

Question (2):

A)-Write the scientific term:

1)-The table in which elements are arranged according to their atomic weight (mass). (----------)

2)-Elements found below the periodic table. (----------)

3)-The table in which elements are arranged according to their atomic number. (----------)

4)-Elements of group zero (0). (----------)

B)-Variant questions:

1)-Who predicated the discovery of new elements and determined their atomic mass. ----------

2)-Who added inert gases to the zero (0) group.

Worksheet 3 [Lesson 2]

[1] – Complete the following:

1 – The ability of an atom in the covalent compound to attract the bonded electrons to itself is called the ----------.

2 – Water& Ammonia are from ----------compound.

3 – The descending arrangement of elements according to their chemical activities is called ----------.

4 – The ---------- & ---------- increase by increasing the atomic number in the same group, while ----------decreases by increasing the atomic number.

5 - ---------- and ---------- are examples of non-polar compound.

[2] What is meant by:

1 – Electro negativity

---

2 – Metalloid

---

[3] Give reasons:

1 – Water molecule is from polar compounds.

---

2 – The atomic size of $_{11}Na$ is greater than that of $_{3}Li$.

---

[4] Choose the correct answer:

1. When sodium reacts with water ----------gas evolves.

   (O_2 - CO_2 - H_2 - N_2)

2. Each period in the modern periodic table starts with --------- element.

   (metallic – semi metallic – nonmetallic – inert)

3. Inside the same period, the element which has high electronegativity lies in group ----------.

   (0 - 7A – 2A – 1A)

[5] Write the balanced chemical equation which expresses the reaction of:

1. Carbon dioxide with water.

   ---

2. Magnesium with dilute Hydrochloric acid.

   ---

3. Magnesium oxide with water.

   ---

4. Carbon with oxygen.

Worksheet 4 [Lesson 2]

[1] – Complete the following:

1 - ----------have the properties of both metals and non-metals.

2 – By increasing the atomic number within group 1A, the metallic property ----------.

3 - ----------is the strongest nonmetal element in group 7A.

4 - ----------is the least metallic element in group 1A.

5 – The nonmetallic atoms tend to ----------electrons and change into ----------.

6 – Each period starts with strong ---------- and the ---------- decreases by increasing the atomic number.

[2] Compare between:

1 – Positive ion and negative ion.

2 – The metallic property in the group and in the period

Worksheet 5 [Lesson 2]

Question (1):

A)-Complete the following statements:

1)-By increasing the atomic number in periods, the atomic size ------due to the -------- force between positive nucleus and the outermost electrons increases.

2)-The atomic size of lithium ($_3$Li) atom is -------- than that of nitrogen ($_7$N) atom and -------- than that of sodium ($_{11}$Na).

3)-The outermost energy level of metals contains ------- 4 electrons, while that of ------- contains more than 4 electrons.

4)-During the chemical reaction, magnesium ($_{12}$Mg) atom loses ------ electrons and changes into ------- ion which carries ------- positive charges.

5)-In water molecule, the electro negativity of oxygen is (3.5) but the electro negativity of hydrogen is (2.1) , the ------atom attracts the electrons of the bond more than ------- atom as it has higher ------.

6)- --------- element has the highest electro negativity in the periodic table which equals ----------.

7)-Metal oxides are called -------- oxides, while non- metal oxides are called --------- oxides.

B)-Choose the correct answer:

1)-Which of the following elements is a metallic element?

($_{12}$Mg -$_{17}$Cl -$_8$O -$_{10}$Ne)

2)-The electronic configuration of magnesium ion (Mg^{+2}) is similar to all the following except --------.

(Na^{+} – $_{10}Ne$- Al^{+3} – $_{18}Ar$)

3)-------- is the least metallic element in group 1A.

(Na – Cs- K –Li)

4)-All the following metals react with water except--------.

(Na – K –Mg – Cu)

5)-Acids are formed when -------- oxides dissolve in water.

(non metal – metal – amphoteric)

6)-Magnesium reacts with oxygen giving ---------.

($MgCl_2$-MgO-$MgSO_4$)

7)-All the following elements are metalloids except--------.

(thallium(Ti) – Silicon (Si) –boron (B) – bromine (Br))

Question (2):

A)-Complete the following chemical equations:

1)-2 Mg + O_2 ⟹

2)-Mg + HCl ⟹

3)-C + O_2 ⟹

4)-MgO + H_2O ⟹

5)-CO_2 + H_2O ⟹

B)-Give reason for:

1)-In periods, by increasing the atomic number, the atomic size decreases.

---

2)-Solution of carbon dioxide in water turns the blue litmus paper into red.

---

3)-Water is more polar than ammonia. (Knowing that the difference of the electro negativity in water =1.2 & Ammonia = 0.9).

Worksheet 6 lesson 3

[1] – Complete the following:

1 – Elements of group 1 are called ----------and they form------- block.

2 – Sodium and Potassium are kept under the surface of ----------.

To prevent them from the reaction with ----------.

3 - ---------- and ----------elements are examples of alkaline earth metals.

4 – The chemical activity of the elements of group 2 is -------- than that of the alkali metals.

5 – All alkali metals are ----------Conductors of heat and electricity.

6 - 2Na + ---------- ⟶ 2NaOH + -------- ↑

[2] Give reasons:

1 – Chlorine is used in the manufacture of the corrector's substances.

----

2 – Sodium fires don't put off with water.

----

3. Elements of group(1) are known as alkali metals.

----

4. Liquified nitrogen is used in preservation of cornea of the eye.

----

[3] Choose the correct answer:

1. ----------is considered from halogen.

(Sodium - Chlorine - Helium – Calcium)

2. ----------in its salt solution.

(Chlorine replaces bromine – bromine replaces fluorine – iodine replaces chlorine - iodine replaces fluorine)

[4] Mention one use for each of the following elements:

1. Liquid sodium:

---

2. Silicon:

---

3. Cobalt 60:

---

[5] From the figure; Mention the symbols which indicate the following

																N
A												I	K		L	
	C										H					O
B				D			E		F		G	J			M	

1. Inert gases. _____
2. Alkali metals. _____
3. Halogens. _____
4. Alkaline earth metals. _____
5. The most active metal. _____
6. The most active non metal. _____

[6] Write the scientific term:

1 – Monovalent elements which exist in p-block in the modern periodic table. (----------)

2 – The halogen which exists in a liquid state. (----------)

3 – The radioactive elements which is used in food preservation.

(----------)

4 – The metalloids which is used in the manufacture of electronics.

(----------)

5 – The boiling point of liquified nitrogen. (----------)

[7] – Write the chemical equation that illustrate the following:

1 – Reaction of potassium with bromine.

----------.

2 – Passing chlorine gas in potassium bromide solution

----------.

Worksheet 7 Lesson 4

Q1. Complete:

1. Water molecule consists of the combination of one --------- atom with two ---------- atoms to form two single -------- bond.
2. The abnormality of the physical properties of water is due to the presence of ----------bond.
3. 2 H_2O $\xrightarrow{\text{electrolysis}}$ ----------+ ----------
4. From the water pollutants are:
   ----------, ----------, ----------

Q2 Give reasons:

1. The presence of hydrogen bond between water molecules.
   ----
2. Pure water doesn't affect litmus paper.
   ----
3. Although sugar is a covalent compound, it dissolves in water.
   ----
4. The boiling point of water is high.

Q3 Choose from column B the suitable answer from A

A	B
1. Death of brain cells	a. Lead
2. Cancer of liver	b. Sodium
3. Blindness	c. Mercury
	d. Arsenic

Q4. What are the results of:

1. **Water is polluted with the wastes of man and animals.**

   ---

2. **Storing water in plastic bottles of mineral water.**

   ---

3. **Drainage of factories wastes in rivers& seas.**

   ---

4. **Using rivers& seas water for cooling the nuclear reactor.**

Q5 A. Write the chemical equation which illustrates the electrolysis of water.

B. If the volume of evolved oxygen gas at the anode was 2 cm3, what is the volume of hydrogen gas evolved at the cathode.

---

c. Mention the name of the apparatus used in the electrolysis of water.

Worksheet 8 Lesson 1 Unit 2

1 – Write the scientific term:

1 – An Instrument which is used for measuring atmospheric pressure.

(----------)

2 – An instrument used to determine the elevation from the sea level.

(----------)

3 – The curved lines that join the points of equal pressure in the atmospheric pressure maps. (----------)

4 – The measuring unit of the atmospheric pressure.

(----------)

5 – The gaseous envelope which surrounds the Earth.

(----------)

6. The boundary separating between stratosphere& mesosphere where temperature is rather constant. (----------)

7. Charged layer reflects radio waves. (----------)

2 – Give reasons:

1 – The lower part of the stratosphere is suitable for flying airplanes.

----

2 – Ionosphere is important for radio stations.

Q3– Complete the following:

1 – The temp. of the troposphere decreases with a rate -------^{o}C for each ---------- height.

2 – The highest temperature layer in the atmosphere is ---------- & the least temperature one is ----------.

3 – Most of weather features occur in --------- Layer whereas satellites swim through the ----------layer.

Q4. Mention the importance of each:

1. **Van Allen's belt.**

   ---
2. **Altimeter.**

   ---
3. **Satellites.**

Q5. What is meant by:

1. **The aurora phenomena.**

Q6 Choose the correct answer:

1. **Meteors are formed in ----------.**
   (mesosphere – ionosphere – exosphere – stratosphere)
2. **Normal atmospheric pressure equals ----------millibar.**
   (1013.25 – 76 – 1.013 – 760)
3. **---------- is located between stratosphere& mesosphere.**

   (Tropopause – statopause – Mesopause – Thermopause)

Worksheet 9 Lesson 1 Unit 2

Question (1):

Complete the following statements:

1)-The Earth is surrounded by ---------- envelope known as ----------.

2)-The atmospheric pressure ---------- by increasing the length of air molecules.

3)-The weight of air ---------- by increasing the elevation above sea level, so the atmospheric pressure at the top of mountain is -------- than at its foot.

4)-The atmospheric envelope consists of ------- layers which are called --------, stratosphere, mesosphere & ----------.

5)-The temperature of the troposphere decreases with rate ------° C for each 1 Km.

6)-The thickness of stratosphere is about ----------.

7)-The air movement in troposphere is ----------, where the hot air moves -------- ,while the cold air moves ----------.

Question (2)

A)-Write the scientific term:

1)-The curved lines that join the points of equal pressure in maps.

(----------)

2)-The region between the mesosphere and thermosphere.

(----------)

3)-An instrument used by pilots in airplanes to measure the elevation.

(----------)

4)-The weight of air column of an atmosphere height per unit area.

(----------)

5)-The measuring unit of atmospheric pressure. (----------)

6)-A barometer used to determine the possible day weather.

(----------)

B)-Problem:

If the temperature at sea level is 24.5° C, find the temperature at the top of troposphere layer if its thickness is 13Kilometer.

Question (3)

A)-Choose the correct answer:

1)-The upper part of thermosphere layer contains ----------.

(clouds& rains – helium & hydrogen – winds – charged ions)

2)-The hottest layer in atmospheric envelope is ---------.

(exosphere – mesosphere – troposphere – thermosphere)

3)-Ozone layer is found in ----------layer.

(troposphere – thermosphere – stratosphere – mesosphere)

4)-The normal atmospheric pressure equals ----------mb at sea level.

(76 – 1013.25 – 1.013 – 760)

B)-Give reasons for:

1)-The stratosphere layer is called by ozonic atmospheric envelope.

---

2)-Altimeter instrument is very important for pilots.

---

3)-The last layer of atmospheric envelope is called thermal layer.

Worksheet 10 Lesson 2 Unit 2

Q1. Choose the correct answer:

1. Ozone layer is measured by a unit called ----------.
   (Km – Dobson – UV – mm3)
2. All these are green house gases except ----------.
   (CO2 – O2 – N2O – CH4)

Q2. Write the scientific term:

1. One of the atmosphere components that its ratio increased in recent years to reach about 0.038%. (----------)
2. A molecule which is formed from the combination of a free oxygen atom with one oxygen molecule. (----------)
3. A type of ultraviolet radiation that is absorbed completely (100%) in the ozone layer. (----------)
4. The continuous increase of the average temperature of the air near the surface of the earth. (----------)
5. The compounds which are the most dangerous ozone layer pollutants. (----------)

Q3. Complete:

1. Ultraviolet radiation has a ----------effect, and infrared radiation has a ----------effect.
2. Among the pollutants of ozone layer are ---------- compounds that are used in air conditions sets& ---------- compounds that are used in fire extinguishers.

Q4. Give reasons:

1. Formation of ozone layer in the stratosphere.
   ----
2. We must stop building concord airplanes.

Worksheet 11 Lesson 1 Unit 3

Q1. Write the scientific term:

1. The remains of old organisms that lived in the past for a certain Period& then became extinct. (----------)
2. Replacing part by part, the wood material of trees by silica to form petrified woods. (----------)

Q2. Complete the following:

1. Archaeopteryx represents the link between ----------& ----------.
2. Fossils are used in ----------exploration& determining the age of ----------.

Q3. Choose the correct answer:

1. Fossils are often found in ----------rocks.
   [metamorphic – sedimentary – volcanic – igneous]

2. The ---------- is an example of microfossils.
   [mammoth – ferns – foraminifera – archaeopteryx]

3. Complete fossils of insects are found preserved in ----------.
   [ammonites – amber – igneous rocks – ambergris]

Q4. Define :

1. Fossils:

   ---
2. Index fossils:

Q5 Mention the importance of each of the following:

1. Coral fossil:

---

2. Nummulites fossils:

Q6: Give reasons for:

1. Naming the petrified forests with Wood Mountain.

---

2. Gebel El- mokattam was once a sea floor more than 35 million years ago.

---

3. Fossils are important in petroleum exploration.

---

4. Petrified woods are considered from fossils although they look like rocks.

Q7. What is the difference between:

1. Mold and Cast.

---

2. Remains and traces.

Q8: Correct the underlined word:

1. The first discovered fossils of <u>mammoth</u> were found in amber.

---

2. <u>Ferns fossils</u> indicate that they lived in mild environment.

Worksheet 12 Lesson 2 Unit 3

Q1. Write the scientific term:

1. An extinct animal which has a wolf's head , a dog's tail and a tiger's skin. (----------)
2. The death of all members of species of living organisms. (----------)

Q2. Mention the most important factors that cause species extinction.

Q3. Choose the correct answer:

1. The ---------- indicate(s) extinction.
   [Fossils – protectorate – Evolution – Ecological equilibrium]

2. ----------protectorate is the first who established natural protectorate in Egypt.
   [Saint Cathrine – Ras Mohamed – Wadi Hetan – Petrified forest]

3. All of the following are endangered species except ----------.
   [Panda – Bald eagle – Quagga – Rhinoceros]

4. All of the following are natural disasters that threaten the living organisms except----------.
   [floods – volcanoes – drought waves – global warming]

Q4. Correct the underlined word:

1. Destroying the habitat is one of the factors that contribute to species adaptation. ----------
2. The red list issued by IUCN includes the extinct species. ----------

Q5. Mention three ways to protect living organisms from extinction.

1. ----------.
2. ----------.
3. ----------.

Q6. Mention what characterize each of the following:

1. Ras Mohamed protectorate.

---

2. Wadi Hetan area.

Q7. Give reasons for:

1. Removing trees of tropical forests is one of the most important factors of extinction.

---

2. The desert ecosystem is significantly affected by the absence of one of its species.

Q8. Exclude the unsuitable word& mention what the rest has in common:

1. Panda/ Rhinoceros / Golden frog / Bald eagle.

---

2. Dodo / Quagga/ Bald eagle / Tasmanian cat.

Q9. Mention { cast or mold} for each of the following:

1. The mask of superman. ----------
2. Wax museum statues in Helwan. ----------
3. Cubes of ice. ----------
4. Models of clothes shows. ----------

Revision [1]

Give reasons:

1 – Scientists thought to classify elements according to their properties.

---

2 – Mendeleev had to put more than one element in one place of the table.

---

3 –Atomic size of Sodium $_{11}$Na is greater than that of Magnesium $_{12}$Mg.

---.

4 – In groups, by increasing the atomic number, the atomic size increases.

---

5 – Methane and hydrogen sulphide are not considered from polar molecules.

Show by symbolic balanced equation each of the following:

1- Adding dilute HCl to pieces of Magnesium.

---

2 – Burning a magnesium strip in air , then adding some water.

---

3 – Burning a piece of coal in air.

Locate the position of the following elements in the modern periodic table:

1 – $_{12}$Mg:----------

----

1 – $_{9}$F:----------

----

3 – $_{18}$Ar: ----------

Find the atomic number of each of the following:

1 – An element exists in period 2 and group 6A

----

2 – An element exists in period 3 and group 1A

Revision[2]

1 – Write the scientific term:

1 – Elements of group 1A in the modern periodic table.

(----------)

2 – The valancy of alkaline earth metals. (----------)

3 – Elements of group 7A in the modern periodic table.

(----------)

4 – The radioactive element which is used in food preservation.

(----------)

5 – The non-metal which used in preservation of cornea of the eye.

(----------)

6 – The halogen which can replace both bromine and chlorine in their salt solution. (----------)

7 – A curved lines that join the points of equal pressure in atmospheric pressure maps. (----------)

8 – The region between stratosphere and mesosphere at which the temp. remains constant. (----------)

9 – A barometer used to determine the possible day weather.

(----------)

10 – A layer protects man's life from harmful radiation.

(----------)

2 – Mention one use for each of the following:

1 – Silicon: ----------.

2 – Liquid sodium: ----------.

3 – Altimeter: ----------.

4– Aneroid: ----------.

Give reasons:

1 – All alkaline earth metals sink in water.

----

2 – Pilots prefer to fly their planes in stratosphere.

----

3 – The atmospheric pressure decreases by increasing the altitude above the sea level.

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Prep. (2) t 1

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Questions of the school book

Unit 1

Lesson (1)

[1] Complete the following statements:

1- Mendeleev arranged the elements ascendingly according to .... while Moseley arranged them ascendingly according to ....

2- The Modern periodic table consists of .... horizontal periods and ... vertical groups.

---

① atomic weight - atomic number

② 7 - 18.

---

[2] What is the scientific principle upon which the elements are arranged in Modern periodic table?

- An ascending order according to their atomic numbers and the way of filling energy (sublevels) with electrons.

---

[3] Locate the position of the following elements in the modern periodic table:

1. Hydrogen ($_{1}H$) : Period 1 group (1A)
2. Neon ($_{10}Ne$) : Period 2 group (0)
3. Calcium ($_{20}Ca$): Period 4 group (2A)
4. Sodium ($_{11}Na$): Period 3 group (1A)
5. Aluminium ($_{13}Al$): Period 3 group (3A)
6. Argon ($_{18}Ar$) : Period 3 group (0)

(4) Calculate the atomic numbers of the following elements

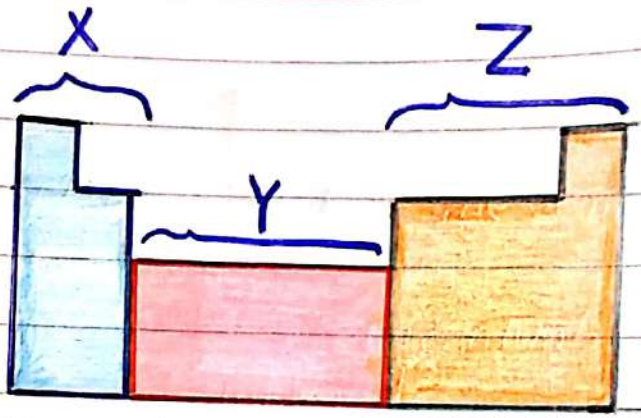
1- An element which is located in the 1st period and group zero.

2- An element which is located in the 2nd period and group (3A)

3- An element which is located in the 3rd period and group (7A).

1- (2) 2- (5) 3- (17)

(5) Look at the opposite figure, which represents a section of the periodic table, then answer the following:



1) What are the names of the elements blocks indicated by letters X, Y and Z?

2) What is the number of groups of each block?

3) what is the new number of zero group and group (7A)?

1) X is s-block Y is d-block Z is p-block

2) X consists of 2 groups Y consists of 10 groups Z consists of 6 groups.

3) Zero group is (18) and group (7A) is (17).

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(3)

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6 Study the opposite figure that shows the electronic configuration of the element (X) in the modern periodic table:

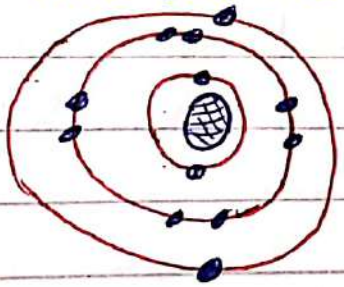
Deduce the atomic number of the element that follows that element in:

① the same period ② the same group.

∵ the atomic number of element X = 2 + 2 = 4
and it has 2 energy levels
∴ the atomic number of the element that follows element (X)

1- in the same period = 4 + 1 = 5

2- in the same group = 2 + 8 + 2 = 12



Unit 1 Lesson 2

1 Put (✓) or (X) and correct the wrong ones:

1- The atomic size increases in the same group by increasing the atomic number

2- Water and ammonia are from polar compounds ( )

3- Some alkalis dissolve in water forming bases ( )

4- Solutions of nonmetal oxides turn the violet litmus solution into red ( )

1-(✓) 2-(✓) 3-(X) 4-(✓)

---

2 Choose the correct answer:

1- Each period in the periodic table starts with ...
(metal - metalloid - nonmetal - inert gas)

2- When sodium reacts with water, ... gas evolves
(N_2 - O_2 - H_2 - Co_2)

1- metal 2- H_2

---

3 What is meant by ...?

(1) Metalloids: They are the elements which have the properties of both metals and nonmetals.

(2) Chemical activity series:
It is a series in which metals are arranged in a descending order according to their chemical activity.

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4 Explain the behaviour of the following elements with water:

1- Iron 2- silver 3. potassium

1- Iron reacts at high temperatures with hot water vapour

2- Silver doesn't react with water.

3- potassium reacts instantly with water and hydrogen gas evolves which burns with a pop sound.

5 write the balanced chemical equations, which express the following reactions:

(1) Carbon dioxide with water

(2) Magnesium with dilute hydrochloric acid.

(1) $CO_2 + H_2O \longrightarrow H_2CO_3$

(2) $Mg + 2HCl \xrightarrow{\text{dilute}} MgCl_2 + H_2\uparrow$

Unit 1 Lesson (3)

(1) choose the correct answer

1- --- is considered from halogens
(sodium - chlorine - Helium - Calcium)

2- --- in its salt solutions.
a- chlorine replaces bromine b- bromine replaces fluorine
c- Iodine replaces Chlorine d- Iodine replaces fluorine

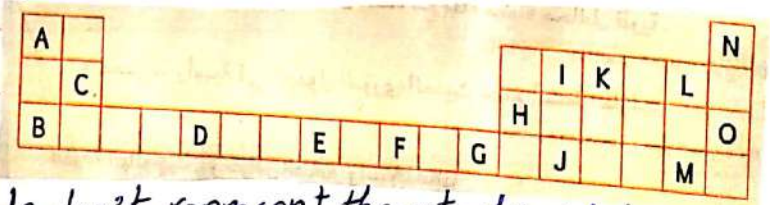
1- Chlorine 2. a- Chlorine replaces bromine

(2) Give a reason for each of the following:

1- Elements of group (1A) are known as alkali metals
2- Liquified nitrogen is used in the preservation of cornea of the eye.

1- Because they react with water forming alkaline solutions.
2- Due to the decrease of its boiling point (-196°c)

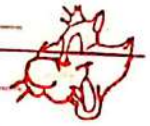
(3) Study the following figure which represents a section of the periodic table then answer the following



NB. The letters in the table don't represent the actual symbols of elements

1- What is the symbol(s) which indicates the ...?
(a) inert gas (b) alkali metals (c) Halogens.

2- what is the symbol which indicates the ...?
(a) most active metal (b) Most active non metal.



1 @ (N, O) ⓑ (A, B) © (L, M) 2 - @ B ⓑ L

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Date

7

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4 Mention one use of each of the following elements:

1- Liquid sodium: It is used in transferring heat from inside the nuclear reactor to outside, this heat is used to obtain the vapour energy required to generate electricity.

2- Silicon: Silicon slides are used in the manufacture of electronic devices such as computer, because it is semi-conductor.

3- Cobalt-60 It is used in food preservation, because it emits gamma rays which prevent the reproduction of microbial cells and donot harm the human.

5 The following table shows the properties of three elements (X , Y and Z),

Element symbol	Behaviour with water	Physical state	Electric conductivity	Density (gm / cm^3)
X	dissolve	gas	bad conductor	0.003
Y	react	solid	good conductor	3.59
Z	react instantly	solid	good conductor	0.86

Mention the symbol, which represents an element from :

1. Alkali metals : ..... 2. Halogens : .....

1-(Z) 2(X)

Unit 1 Lesson 4

① Choose the correct answer

1- All the following are among the properties of water except ...

a- it has neutral effect on litmus paper

b- it is a polar compound

c- it is volume increases by freezing

d. it decomposes by heat into its elements.

2- There are ... bonds among the water molecules.

a- metallic b- ionic c- hydrogen d- Covalent.

3- A liquid boils at 100°c. What is the other property, which confirms that it is pure water? ...

a- it dissolves table salt b- its density decreases on freezing c- it has a neutral effect on litmus paper d- it evaporates on heating.

(1-d) (2-c) (3-b)

---

② Give reasons for the following

1- The presence of hydrogen bonds between water molecules.

- Because water is a polar compound due to the higher electronegativity of oxygen with respect to hydrogen.

(2) Give reasons

2- Pure water has no effect on litmus solution
- Because water is formed of equal numbers of positive hydrogen ions (H^+) and negative hydroxide groups (OH^-)

3- Dissolving of sugar in water although it is among covalent compounds.
- Because sugar molecules can make hydrogen bonds with water molecules.

(3) What will happen in each of the following cases.?

1- The pollution of water with animal and human Wastes
- The infection of many diseases such as bilharzia, typhoid and hepatitis

2- Storing water in plastic bottles.
- plastic reacts with chlorine gas (used as water disinfectant) leading to the increase in the infection rates by cancer.

(4) choose from column (B) what suits it in column (A)

(A) Harms	(B) Pollutant
1- Death of brain cells	a- Lead
2- Liver cancer	b- Sodium
3- Blindness	c- Mercury
	d- Arsenic

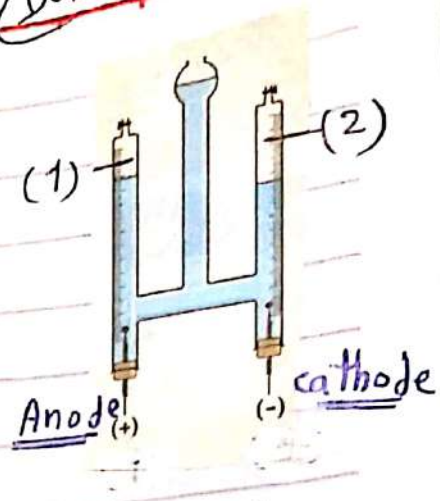
(1-a) (2-d) (3-c)

(5) The opposite figure represents Hofmann's voltameter which is used in water electrolysis:

1- Write the chemical equation, which expresses the reaction.

2- What is the volume of the gas, which burns with a pop sound on approaching a glowing splint to it, if the volume of the other gas (oxygen) is 6 cm^3?

3- Label the numbers (1) and (2)



---

1) $2H_2O \xrightarrow[dil.\ H_2SO_4]{Electrolysis} 2H_2\uparrow + O_2\uparrow$

2) The volume of hydrogen gas = 2 x the volume of oxygen gas
(burns with a pop sound on approaching a glowing splint to it)
$= 2 \times 6 = 12\ cm^3$

3) (1) oxygen gas (2) hydrogen gas.

---

(6) Explain: the nuclear reactors cause thermal and radiant water pollution.

1- Increasing the temperature of some water areas used in cooling the nuclear reactors causes thermal pollution

2- Leakage of radioactive material from nuclear reactors causes radiant pollution.

No
Date

علوم مع غادة صباح (11)

(7) Explain how to protect water from pollution? 3 points.

1- preventing of getting rid of sewage, wastes of factories and dead animals in the rivers or canals.

2- Developing the stations of water purification and periodical analysis to water used in drinking

3- Disinfection of the drinking water tanks which are found on the roofs of buildings in a periodical manner.

Unit 2 Lesson (1)

① Choose the correct answer

1- The normal atmospheric pressure equals ... mb at sea level. (76- 1013.25 - 1.013 - 760)

2- ... is the region between stratosphere and mesosphere.
(thermopause - Mesopause - stratopause - tropopause)

3- Luminous meteors are formed in ... Layer
(ionosphere - stratosphere - mesosphere - exosphere)

1- 1013.25 2- stratopause 3- mesosphere

---

(2) Give reasons

1- the Lower part of stratosphere is suitable for flying aeroplanes.
- Pilots prefer to fly their aeroplanes in stratosphere.
- Because in this part, the air motion is horizontally and neither clouds nor weather turbulences exist.

2- Ionosphere is important for radio stations.
- Because it reflects radio waves transmitted by radio stations and communication centres.

(3) What is the importance of ... ?

1- Van-Allen belts: They play an important role in scattering of harmful charged cosmic radiations away from the Earth.

2- Altimeter: It is used by pilots in aeroplanes to determine their altitudes above sea level.

3- Satellites: They transmit weather conditions information and TV programs.

(4) Arrange the layers of atmospheric envelope according to the nearest to the Earth's surface.
- Troposphere - Stratosphere - Mesosphere - thermosphere.

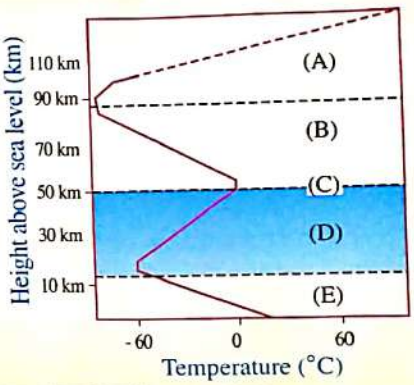
(5) What is meant by ...?

1- Atmospheric pressure : It is the weight of air column of an atmospheric height on a unit area.

2- Aurora phenomenon : It is a phenomenon appears as brightly coloured light curtains at the two poles of the Earth.

(6) 📖 **The opposite figure exhibits the temperature changes in the layers of atmospheric envelope :**

1. Replace the letters on the drawing with suitable labels.
2. Which layer is .....?
   a. The highest in temperature.
   b. The lowest in temperature.



1) (A) Thermosphere Layer.
(B) Mesosphere Layer.
(C) stratopause.
(D) stratosphere layer.
(E) Troposphere layer.

2) (a) Thermosphere Layer.
(b) Mesosphere Layer.

Unit 2 Lesson (2)

(1) Write the scientific term :

1) A molecule is formed by combining an atom of an element with molecule of the same element.

2) The continuous increase in the average temperature of the air near the surface of the Earth.

1) Ozone gas 2) Global warming phenomenon.

(2) Choose the correct answer:

(1) Ozone degree is measured in a unit called...
(Km - Dobson - mm^2 - nm.)

(2) All of the following gases are greenhouse gases except ....
(CO_2 - O_2 - N_2O - CH_4)

1) Dobson 2) O_2

(3) Give reasons for:

1-formation of ozone Layer in the stratosphere Layer.
-Because it is the first Layer in the atmosphere which contains suitable amount of oxygen, that faces Ultraviolet radiations emitted from the Sun.

2-stopping manufacturing of concorde aeroplanes.
-Because their exhausts (nitrogen oxides) affect the ozone Layer.

④ Write short notes about the negative results of global warming.

1- Melting the ice and snow of both south and North poles which would increase the Level of seas and oceans and that leads to:
a) Costal areas as they could drown.
b) Extinction of some polar animals like the polar bear and seals.

2- Severe climatic changes
Among these features is the repeated occurrence of:
- Tropical hurricanes
- Destructive floods.
- Drought waves.
- Forests fires.

Unit (3) Lesson (1)

(1) Write the scientific term :

1- Remains of old organisms that Lived in the past for a certain period, then became extinct

2- Replacing part by part, the wood material of trees by silica to form petrified wood.

1 - Index fossils 2- petrification

(2) Complete

1- Archaeopteryx is the Link between ... and ...

2- fossils are used in petroLeum ... and determining the age of ...

1- reptiles - birds.

2- exploration - sedimentary rocks.

(3) choose the correct answer :

1- ... is an example of microfossils.

(Mammoth - ferns - foraminifera - Archaeopteryx)

2- complete body fossils of insects are found preserved in ...

(ammonites - amber - igneous rocks - ambergris)

1- foraminifera 2- amber

(4) Mention the importance of each of the following:

1) Coral fossils: They indicate that the environment where they lived was a clear, warm and shallow seas.

2) Nummulites fossils: They indicate that the area of El-Mokattam's mountain was a sea floor more than 35 million years ago

(5) What is the difference between:

(1) Mold	Trace
Traces of the internal details of the structure of an old living organism leaving them in the sedimentary rocks after death Ex: Ammonites fossil	traces that indicate an activity of an old living organism leaving them in sedimentary rocks during its life Ex: Dinosaur's foot print
(2) Mold	cast
It is the replica of the internal details of the structure of an old living organism. Ex: Trilobite fossil	It is the replica of the external details of the structure of an old living organism. Ex: Fish cast.

(6) Give reasons

1-Naming the petrified forest in Quattamiya with wood mountain
- Because it contains petrified woods which look like rocks.

2- EL-Mokattam mountain was a part of a sea floor more than 35 million years ago.
- Due to the presence of nummulites fossils in the Limestone rocks of EL-Mokattam's mountain

(7) 📖 **Mention the name and the type of each fossil illustrated in the following figures :**


Fig. (1)


Fig. (2)


Fig. (3)


Fig. (4)


Fig. (5)


Fig. (6)

1- Dinosaur's skull - Remains fossil.
2 Traces of worm's tunnels - trace fossil.
3- Shell cast - cast fossil
4- Amber fossil - complete body fossil.
5- Ammonites - Solid mold fossil
6- Dinosaur's foot print - trace fossil

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(8) Mention the suitable conditions for fossiLs formation or (preservation)

first Presence of hard skeleton of organism

Second the organism body must be buried immediately after death in a medium that preserves it from decomposition.

Third the existence of a suitable medium, in which the mineral material replaces the organic material of the Living organism.

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علوم مع غادة صلاح

Unit (3) Lesson (2)

(1) Choose the correct answer

1- ... indicate (s) extinction
(Fossils - protectorates - Evolution - Ecological equilibrium)

2- ... protectorate is the first established natural protectorate in Egypt.
(Saint cathrine - Ras Mohamed - Wadi Hetan - Petrified forest)

1-fossils 2-Ras Mohamed

---

(2) write the scientific term

- The death of all members of species of living organisms (Extinction)

---

(3) Mention the most important factors that cause species extinction

look at page 100.

أولًا أسباب الانقراض فى العصور القديمة (الانقراضات الكبرى) Reasons of extinction :

A Reasons of extinction in old ages [macro extinctions] :

Many scientists attributed macro extinctions, when many living organisms lived on Earth exposed to like extinction of dinosaurs is due to occurrence of :

1. Meteorite impacts with Earth.
2. The violent Earth movements.
3. The onset of a long glacial age.
4. Emission of poisonous gases from active volcanoes.

Meteorite impacts with Earth causes extinction of dinosaurs

اصطدام النيازك بالأرض
وانبعاث الغازات السامة من البراكين
من الكوارث المسببة لانقراض الديناصورات.

تعرض الكثير من الكائنات الحية التى عاشت على الأرض فى العصور القديمة إلى الانقراض، مثل انقراض الديناصورات إلى حدوث كوارث كبرى.

ارجع العديد من العلماء حدوث الانقراضات الكبرى.

١ اصطدام النيازك بالأرض.
٢ الحركات الأرضية العنيفة.
٣ الغازات السامة المنبعثة من البراكين.
٤ تعرض الأرض لعصر جليدى طويل.

ثانيًا أسباب الانقراض فى العصور الحديثة

B Reasons of extinction in recent ages :

Recent extinction that is occurred now is caused by different factors. Most of them are due to the interference of man with nature such as معظمها بسبب تدخل الانسان فى الطبيعة

① تدمير الموطن الأصلى للكائن الحى
② الصيد الجائر
③ التلوث البيئى
④ التغيرات المناخية الناتجة عن أنشطة الإنسان الصناعية والكوارث الطبيعية

1 Destroying natural habitat

Cutting forests of trees
القطع الجائر لأشجار الغابات

2 Overhunting

Overhunting

3 Environmental pollution.

Death of marine bird due to oil pollution
تعرض طائر بحرى للموت بزيت البترول

4 Climatic changes resulted from industrial activities of man and natural disasters.

جفاف Drought

(4) Explain the effect of extinction of a species of Living organisms on:

a) Simple ecosystem : it is severely affected, because of the rarity of alternative that compensates this absence.

b) Complicated ecosystem It is not affected much, because it has many alternatives.

(5) Mention one difference between the benefits (or characteristics) of Ras Mohamed protectorate and Wadi Hetan area.

-Ras Mohamed protectorate: It contains rare species of coral reefs and coloured fish and numerous of rare plants and animals.

Wadi Hetan area: It contains complete whales' fossils 40 million years ago.

6) Exclude the unsuitable word and mention what the rest has in common:

(1) Quagga / Dodo bird / Mammoth / Bald eagle.

(Bald eagle — Extinct species)

(2) Rhinoceros / Panda bear / Quagga / Bald eagle

(Quaga — Endangered Species)

7) Give reason:

- The simple ecosystem is significantly affected by the absence of one of its species
- Due to the absence of alternative that compensates the absence of a species.

Best wishes

No
Date

Prep (2) t (1) علوم مع غادة مبارك (1)

General Exercise of the school Book

On unit (1)

(1) Choose:

1- Scientist ... discovered the main energy levels in the atom.
a) Bohr b) Mendeleev c) Moseley d) Hofmann

2- Sodium oxide is from ... oxides.
a) amphoteric b- acidic c- nonmetallic d- basic

3) All of the following elements are from semi-metals except ...
a- tellurium b- silicon c- boron d- bromine

4- the strongest metal locates in the ... group.
a- 2A b- 1A c- 1B d- 7A

1- a) Bohr 2) d) basic 3) d) bromine 4- b- 1A

---

(2) What is meant by ...?

1- Chemical activity series: It is a series in which metals are arranged in a descending order according to their chemical activity.

2- Water pollution It is the addition of any substance to the water which causes continuous gradual change in water properties and affecting the health and life of the living creatures.

3- Semi-metals: They are the elements which have the properties of both metals and non-metals.

③ How can you differentiate between magnesium oxide and sulphur oxide?

- By adding some water and drops of litmus solution, to each of them.
- In case of magnesium oxide, the litmus solution turns (into) blue.
- In case of sulphur oxide, the litmus solution turns into red.

---

④ What is the importance of?

1) Liquified nitrogen: It is used in the preservation of cornea of eye, due to the decrease of its boiling point (-196°C)

---

2) Sodium: It is used in transferring heat from inside the nuclear reactor to outside, which is used to obtain the vapour energy required to generate electricity.

3) Water: It is used in agricultural fields, industrial fields and personal fields.

---

⑤ Give reasons for

1- The use of radioactive cobalt 60 in food preservation

- Because it emits gamma rays which prevent the reproduction of microbial cells and do not harm the human

2- Elements of the same group have similar properties.
- Because their atoms have the same number of electrons in the outermost energy level.

3- The boiling point of water is high.
- Due to the presence of hydrogen bonds between water molecules.

4- Alkali(metals) are kept under Kerosene in the Lab
- To prevent them from the reaction with moist air as they are active metals.

(6) What is the effect of the following on the water environment?

1- Drainage of factories wastes in rivers and seas.
- This causes chemical water pollution which leads to the increase of some elements concentration causing great harms as eating fish which contains high concentration of lead causing the death of brain cells.

2- Using of rivers and seas water as a renewable source for cooling the nuclear reactor:
- This leads to thermal water pollution which causes death of marine creatures due to the separation of the dissolved oxygen from water.

6) 3 - Mixing of animals and man wastes with water.

- This leads to biological water pollution which causes the infection by many diseases such as bilharzia, typhoid and hepatitis.

General Exercise of the School Book

On Unit 2

1) Replace each of the following statements by a suitable scientific term:

1- The boundary separating between stratosphere and mesosphere where temperature (is) rather constant.

2- Charged Layer reflects radio waves.

3- One of the atmosphere components that its ratio increased in recent years to reach about 0.038%

4- A type of ultraviolet radiation that is absorbed completely (100%) in the ozone Layer.

1- Stratopause 2- Ionosphere

3- Carbon dioxide (CO_2) 4- Far Ultraviolet rays (UV)

---

② Complete the following phrases:

1- The highest temperature Layer in the atmosphere is ... and the least temperature one is ---

2- Most of weather features occur in .... Layer whereas satellites swim through the ... Layer

3- Ultraviolet radiation has a ... effect, and the infrared radiation has a ... effect.

4- Among the pollutants of the ozone Layer are ... compounds that are used in air Conditioning sets and ... compounds that are used in fire extinguishers.

1- Thermosphere - Mesosphere.

2- Troposphere - exosphere

3- Chemical - thermal

4- Chlorofluorocarbon - halons.

---

③ Illustrate with formulas only the role of ultraviolet radiation in the formation of Ozone gas.

$$O_2 \xrightarrow{UV} O + O$$

$$O + O_2 \longrightarrow O_3$$

---

4) An aeroplane captain announced that the atmospheric pressure outside the aeroplane is 90 millibar, In which Layer of the atmosphere was the plane flying ? Why ?

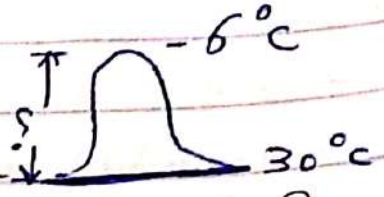
- At the lower part of stratosphere Layer.
- Because at its beginning the atmospheric pressure is 100 mb and it decreases as we go up until it becomes 1 mb at its top.

---

5) Compare between mesosphere and thermosphere in terms of temperature, importance, and air pressure

Po-c	Mesosphere	Thermosphere
Temperature	-90°c at its end	1200°c at its end
importance	It protects the planet Earth from celestial rocky masses that enter the atmospheric envelope by formation of meteors	the upper part(of) thermosphere Layer is called ionosphere which it is important for radio stations because it reflects radio waves transmitted by radio stations and communication centres.
Air pressure	0.01 mb at its top.	—

⑥ Calculate the height of a mountain if the temperature at its foot is 30°c and at its top is −6°c :



The temperature at the (top) of mountain = temperature at its (base) − the decrease in temperature

The decrease in temperature = 30 − (−6) = 36

∴ 36 = Height (km) × 6.5°c

So, height of mountain = $\frac{36}{6.5}$ = 5.5 Km

⑦ What are the similarities between greenhouse effect and global warming?

- The Earth's atmosphere resembles the role of glass in greenhouse as it prevents penetration of infrared radiation causing increasing of Earth's temperature.

General Exercise of the school book On Unit 3

1) Choose the correct answer:

1- fossils are often found in ... rocks
a. metamorphic b. sedimentary c. volcanic
d. igneous.

2- All of the following are endangered species except ....
a- panda b- bald eagle c- quagga d- rhinoceros

3- All of the following are natural disasters that threaten living organisms except...
a- floods b- Volcanoes c- drought
d- global warming.

1-b-sedimentary 2- c-quagga 3-d-global warming

---

2) Define each of the following

1- fossils: they are traces and remains of old living organisms that are preserved in sedimentary rocks.

2- Index fossil: they are the fossils of organisms that lived in a short period of time in the past and wide geographic distribution, then became extinct.

3- Natural protectorates: They are safe areas established to protect endangered species in their (homeland)

(3) Correct the following statement without changing the underlined phrases:

1- The first discovered fossil of mammoth were found preserved in amber.

2- ferns fossils indicate that they lived in mild environment.

3- Destroying the habitat is one of the factors that contribute to species adaptation.

1- The first discovered fossil of mammoth were found preserved in snow.

2- ferns fossils indicate that they Lived in a hot and rainy tropical environment.

3- Destroying the habitat is one of the causes of recent extinction.

(4) Mention three ways to protect living organisms from extinction:

1- Establishing natural protectorate areas.
2- Establishing gene banks for the much endangered species.
3- Increasing the awareness about the importance of natural life to sustain the existence of mankind.

(5) Give reasons for:

1- Petrified Woods are considered from fossils although they look like rocks.

- Because they give us the details about the life of an old plant.

2- fossils are important in petroleum exploration

- Because the presence of them in the rocks of the exploratory wells indicate the suitable Conditions for petroleum exploration.

3- the symbol ecosystem is significantly affected by the absence of one of its species

- Due to the absence of alternative that compensates the absence of a species.

---

(6) Which does each of the following represent (mold or cast)...?

1- The mask of superman :

2- Wax museum statues in Helwan :

3- Cubes of ice :

4- Models of clothes shows :

1, 2, 3, 4 mold.

My best wishes

Questions

Unit (1)

(1) Complete:

1) The most important attempts to classify elements are ……., ……. and …….

2) Mendeleev discovered that the properties of elements were repeated ……. by the beginning of each …….

3) In 1913, the Newzeland scientist ……. discovered that the nucleus of the atom contains …….

4) Moseley discovered after studying ……. rays, the periodic properties of elements are related to their ……. and not to their …….

5) The modern periodic table consists of ……. horizontal periods and ……. vertical groups.

6) Groups of d-block take letter ……. except group ……. which consists of ……. vertical column.

7) In the modern periodic table, element of block …… are located on the left, right side, while elements of block ……. are located in the middle of the table.

8) The number of electrons in the outer most energy level in the atom of an element indicates its ……. number.

9) Element $_{13}X$ lies in period ……. and group ……. in the modern periodic table.

10) By increasing the atomic number within a period, the atomic size ……. because the ……. between positive nucleus and outer most electrons increases.

11) The atomic size of Magnesium ($_{12}$Mg) atom is ……. than that of beryllium ($_{4}$Be) atom as the ……. of Magnesium atom is greater than that of beryllium atom.

12) ……. Is the ability of the atom in covalent molecule to attract the ……. of the bond towards itself.

13) By increasing the atomic size in the group, the electronegativity ……. and the atomic number …….

14) During the chemical reaction, metal atom tends to ……. electrons and changes into …….

15) During the chemical reaction, non-metal atom tends to ……. electrons and changes into …….

16) By increasing the atomic number within group (1), the metallic property ……., while by increasing the atomic number in group (17), the nonmetallic property is …….

17) Metal oxides are called ……. oxides, while non-metal oxides are called ……. oxides.

18) Mg + ……. $\xrightarrow{dil}$ $MgCl_2$ + …….

19) $CO_2 + H_2O \rightarrow$ …….

20) $C + O_2 \xrightarrow{\Delta}$ …….

21) Elements of group (1) are named as ……. and they are from ……. block elements.

22) Elements of group (1) are called alkali metals as their elements react with ……. forming ……. solutions.

23) The valency of alkali metals is …….. as they have …….. electron in their outer most energy level.

24) …….. is the most active metal as it has the largest ……..

25) During the chemical reaction, alkaline earth metals tend to …….. electrons and convert into …….. ions which carry …….. positive (charges).

26) Water can dissolve some …….. compounds such as sugar as they can form …….. bonds with water.

27) Water has …….. effect on litmus paper as it gives equal numbers of positive …….. ions and negative …….. ions.

28) $2H_2O \xrightarrow{\text{.....}}$ ……. ↑ + ……..…↑

29) Artificial water pollutants are classified into …….. and ……..

30) There are …….. bonds among the water molecules.

(2) Write the scientific term:

1- The first real periodic table for classifying elements.
(…….)

2- The partition of periodic table that contains elements having similar proportion in vertical column. (…….)

3- The table in which elements are arranged according to their atomic number. (…….)

4- A group of elements found of the periodic table and includes ten vertical columns. (…….)

5- Elements of d-block in the modern periodic table.

(…….)

6- Elements of group zero in the modern periodic table.

(…….)

7- The number of protons inside the nucleus of atom of an element.

(…….)

8- The measuring unit of atomic radius which is used as a measure for the atomic size. (…….)

9- The relationship between the atomic size of the atom of an element and its electronegativity. (…….)

10- An atom of metallic element which loses one electron or more during the chemical reaction. (…….)

11- The inert gas which has the same electronic structure of sodium ion (Na^+). (…….)

12- Oxides which dissolve in water producing alkali.

(…….)

13- The first group of s-block groups in the periodic table.

(…….)

14- The most active metal in the periodic table. (…….)

15- The second group at s-block groups in the periodic table.

(…….)

16- Monovalent elements exist in p-block in the periodic table.

(…….)

17- The halogen which exists in a solid state. (…….)

18- The halogen which exists in a liquid state. (…….)

19- The kind of rays which are emitted from cobalt (60).
(…….)

20- The metalloid which is used in the manufacture of electronic devices. (…….)

21- It is a series in which metals are arranged in a descending order according to their chemical activity. (…….)

22- They are non metallic oxides which dissolve in water forming acidic solutions. (…….)

23- It is a weak electrostatic attraction force that arises between the molecules of polar compounds. (…….)

24- It is the process of converting the molecules of some covalent compounds into ions. (…….)

25- It is addition of any substance to the water which causes continous gradual change in water proportion affecting the health and the life of living creatures. (…….)

(3) Give reason for:

1) Mendeleev left gaps (empty cells) in his periodic table.

……..

2) Mendeleev had to put more than one element in one cell.

……..

3) Mendeleev classified the elements of each groups into two sub groups.

……..

4) Element of the same groups have similar properties.

……..

5) The atomic size decreases in periods by increasing the atomic number.

……..

6) The atomic size of ($_{11}$Na) is greater than that of ($_{3}$Li)

……..

7) Water molecule is from the polar molecules.

……..

8) During the chemical reactions, sodium ($_{11}$Na) atom tends to form positive ions.

……..

9) Cesium (Cs) is the most metallic element in group (1A)

……..

10) We can use dilute HCl to differentiate between copper and Magnesium.

……..

11) Alkali metals are monovalent elements, while alkaline earth metals are divalent ones.

……..

12) Lithium floats on water surface, while cesium sinks in water.

……..

13) Elements of group (2A) are not kept under the surface of kerosene.

……..

14) Cobalt – 60 is used in preservation of food.

……..

15) Liquified Nitrogen is used in preservation of cornea of the eye.

……..

16) Dissolving of sugar in water although it is from covalent compounds.

……..

17) Pure water has no effect on litmus paper.

……..

18) Oxygen gas evolves at a node, while hydrogen gas evolves at cathode.

……..

19) Adding few drops of dilute sulphuric acid to water during its electrolysis by Hofmann's voltameter.

……..

20) We should not keep the tap water in plastic bottles.

……..

(4) Find the location of the next elements in the modern periodic table:

$_{19}K$ - $_{10}Ne$ - $_{3}Li$ - $_{13}Al$ - $_{11}Na$ - $_{2}He$

(5) Find the atomic number for elements in:

1- Period (4) group (2A)

2- Period (2) group (2A)

3- Period (3) group (zero)

4- Period (2) group (7A)

Unit (2)

(1) What is meant by:

1- Atmospheric envelope of the Earth

2- Atmospheric pressure

3- Isobar

4- Tropopause

5- Stratopause

6- Mesopause

7- Van Allen belts

8- Aurora phenomenon

9- Exosphere

10- Global warming phenomenon

11- Green house phenomenon

(2) Give reasons for:

1- The troposphere layer is called by this name.

2- The upper part of thermosphere layer is called ionosphere.

3- Mesosphere layer is highly rarefied.

4- Mesosphere layer is called by this name.

5- The stratosphere layer is called ozonic atmospheric envelope.

6- The last layer of atmospheric envelope is called thermal layer.

Unit (3)

(1) What is meant by:

1) Fossils
2) Traces
3) Remains
4) Amber
5) Solid cast
6) Mold
7) Petrified fossils
8) Petrified woods
9) Extinction
10) Natural protectorates
11) Complicated ecosystem
12) Simple ecosystem
13) Food chain
14) The moment of extinction

Give reasons for:

1- Removing trees of tropical forests is one of the most important factors of extinction.

2- Bald eagle is from endangered species.

3- The desert ecosystem is significantly affected by the absence of one its species.

4- UNESCO has chosen Wadi Hetan area as the best world heritage area for whales skeletons.

5- Bluestone is an important natural protectorate.

6- Scientists attempt to establish a gene bank for some types of living organisms.

7- Scarcity of bamboo plant.

8- Disappearance of papyrus plant in upper Nile.

9- Ammonites fossil is classified as a cast fossil.

10- Formation of petrified woods fossils.

11- Naming the petrified forest with wood mountain.

12- The petrified woods are considered from fossils although they look like rocks.

13- Gebel El-Mokattam was a part of a sea floor more than 35 million years ago.

Model Answer

Unit (1)

(1) Complete:

1) Medeleeve, Moseley and Modern periodic table
2) periodically – period
3) Rutherford – protons
4) X rays – atomic number – atomic weight
5) 7 – 18
6) B – 8 – 3
7) S - d
8) group
9) 3 - 3A
10) decreases – attraction force
11) bigger – number of energy levels
12) electronegatively - electrons
13) decreases – increases
14) loses – positive ion
15) gains – negative ion
16) increases – decreases
17) basic oxides – acidic oxidic
18) 2 HCl – $H_2\uparrow$
19) H_2CO_3
20) $CO_2\uparrow$

21) Alkali metals – S

22) water – alkaline solution

23) Monovalent – one

24) Cesium – atomic size

25) loses two – positive – two

26) Covalent – hydrogen

27) neutral – hydrogen – hydroxide

28) $2H_2O \xrightarrow[\text{electrolysis}]{\text{Dil } H_2SO_4} 2H_2\uparrow + O_2\uparrow$

29) biological – chemical – thermal and radiant pollution

30) hydrogen

(2) Write the scientific term:

1- Mendeleev's periodic table

2- group

3- Moseley's periodic table

4- transition elements

5- transition elements

6- inert gases

7- atomic number

8- pico metre

9- inversely proportional

10- positive ion or cation

11- Neon

12- metal oxides

13- Alkali metal

14- Cesium

15- Alkaline earth metal

16- Halogens

17- Iodine

18- Bromine

19- Gamma

20- Silicon

21- Chemical activity series

22- Acidic oxides

23- Hydrogen bond

24- Ionization

25- water pollution

(3) Give reason for:

1) Mendeleev left gaps (empty cells) in his periodic table.

Because he predicted the discovery of new elements.

2) Mendeleev had to put more than one element in one cell.

To put these elements according to similarity in their properties.

3) Mendeleev classified the elements of each groups into two sub groups.

Due to the differences between their properties.

4) Element of the same groups have similar properties.

Because their atoms have the same number of electrons in the outermost energy level.

5) The atomic size decreases in periods by increasing the atomic number.

Because the attraction force between the positive Nucleus and the outermost electrons increases through the period by increasing the atomic number.

6) The atomic size of ($_{11}$Na) is greater than that of ($_{3}$Li)

Due to the increase of the number of energy levels through the group by increasing the atomic number, Lithium has two energy levels but sodium has three energy levels.

7) Water molecule is from the polar molecules.

Because the difference in electronegativity between the elements forming their molecules is relatively high

H = 2, 1 O = 3.5

So the electronegativity between O & H = 3.5 - 2.1 = 1.4

8) During the chemical reactions, sodium ($_{11}Na$) atom tends to form positive ions.

Because sodium atom loses the outermost electron forming positive ion carrying one positive charge (Na^+)

9) Cesium (Cs) is the most metallic element in group (1A)

Because it has the largest atomic size in group 1A so it loses the outmost electron very easy.

10) We can use dilute HCl to differentiate between copper and Magnesium.

Because Magnesium reacts with dilute HCl and Hydrogen gas evolves, while copper doesn't react with HCl.

$Mg + 2HCl \xrightarrow{dil} MgCl_2 + H_2\uparrow$

11) Alkali metals are monovalent elements, while alkaline earth metals are divalent ones.

Because alkali metals have only one electron in their outermost energy level, but alkaline earth metals have two electrons in their outermost energy level.

12) Lithium floats on water surface, while cesium sinks in water.

Because the density of Lithium is less than that of water, while the density of cesium is greater than that of water.

13) Elements of group (2A) are not kept under the surface of kerosene.

Because they don't react with moist air as they less active than alkali metals.

14) Cobalt – 60 is used in preservation of food.

Because it emits gamma rays which prevent the reproduction of microbial cells.

15) Liquified Nitrogen is used in preservation of cornea of the eye.

Due to the decrease of its boiling point (-196^{o})

16) Dissolving of sugar in water although it is from covalent compounds.

Because sugar molecules can make hydrogen bond with water molecules.

17) Pure water has no effect on litmus paper.

Because when water ionizes, it gives equal numbers of positive hydrogen ions (H^{+}) and negative hydroxide ions (OH^{-}).

18) Oxygen gas evolves at anode, while hydrogen gas evolves at cathode.

Oxygen gas evolves at the anode because its ions are negatively charged, while hydrogen gas evolves at the cathode because its ions are positively charged.

19) Adding few drops of dilute sulphuric acid to water during its electrolysis by Hofmann's voltameter.

Because pure water is a bad conductor of electricity, but acidified water good conductor of electricity.

20) We should not keep the tap water in plastic bottles.

Because plastic reacts with chlorine gas leading to the increase in the infection rates by cancer.

(4) Find the location of the next elements:

$_{19}K$ — 2, 8, 8, 1

Period 4

Group 1A

$_{10}Ne$ — 2, 8

Period 2

Group zero

$_{3}Li$ — 2, 1

Period 2

Group 1A

$_{13}Al$ — 2, 8, 3

Period 3

Group 3A

$_{11}Na$ — 2, 8, 1

Period 3

Group 1A

$_{2}He$ — 2

Period 1

Group zero

(5) Find the atomic number for elements in:

1-)))) → 20
2 8 8 2

2-)) → 4
2 2

3-))) → 18
2 8 8

4-)) → 9
2 7

Unit (2)

(1) What is meant by:

1- Atmospheric envelope of the Earth:

It is a gaseous envelope rotating with the Earth around its axis and it extends about 1000 km above the sea level.

2- Atmospheric pressure:

It is the weight of air column above unit area.

3- Isobar

It is curved lines that join the points of equal pressure in atmospheric pressure maps.

4- Tropopause

It is the region between troposphere and stratosphere.

5- Stratopause

It is the region between stratosphere and mesosphere.

6- Mesopause

It is the region between mesosphere and thermosphere.

7- Van Allen belts

They are two magnetic belts surrounding ionosphere and play an important role in scattering of harmful charged cosmic radiations.

8- Aurora phenomenon

It is a phenomenon that appears as brightly coloured light curtains seen from the both poles of the Earth.

9- Exosphere

It is a region in which the atmospheric envelope is inserted with outer space.

10- Global warming phenomenon

It is the continuous increase in the average temperature of the Earth's near surface air.

11- Green house phenomenon

It is the trapping of infrared radiation in the troposphere layer due to the increase of the ratio of greenhouse gases which cause the increase of planet Earth temperature.

(2) Give reasons for:

1- The troposphere layer is called by this name.

Because, all atmospheric phenomena changes take place in it.

2- The upper part of thermosphere layer is called ionosphere.

Because, it contains charged ions.

3- Mesosphere layer is highly rarefied.

Because it contains limited quantities of helium and hydrogen gases only.

4- Mesosphere layer is called by this name.

Because, it is the coldest layer as its temperature decreases as we go up until it becomes -90°.

5- The stratosphere layer is called by ozonic atmospheric envelope.

Due to the presence of ozone layer in it.

6- The last layer of atmospheric envelope is called thermal layer.

Because, it is the hottest layer in atmospheric envelope and the temperature = 1200°C.

Unit (3)

(1) What is meant by:

1) Fossils:

They are traces and remains of old living organisms that are preserved in sedimentary rocks.

2) Traces:

Traces indicate the activity of once an old living organism during its life.

3) Remains:

Parts indicate the remains of once an old living organism after death.

4) Amber:

Solidified resinouns matter which was secreted by pine trees in old geologic ages.

5) Solid cast:

It is the replica of the external details of a skeleton of once an old living organism.

6) Mold:

It is the replica of the internal details of a skeleton of once an old living organism.

7) Petrified fossils:

They are fossils, in which minerals replace the organic matter for organism part by part leaving the shape without any change.

8) Petrified woods:

They are fossils which are formed as a result of replacing the organic matter of wood by the silica part by part and they give us details about the life of once an old plant.

9) Extinction

It is the continuous decrease without compensation in the number of a certain species of living organisms until all members die.

10) Natural protectorates:

They are safe areas established to protect endangered species in their homeland.

11) Complicated ecosystem:

It is an ecosystem that has multiple members and it is not affected much by the absence of one of its species.

12) Simple ecosystem:

It is an ecosystem that has a few members and it is severely affected by the absence of one of its species.

13) Food chain

It is the path of energy that transmits from a living organism to another in the ecosystem.

14) The moment of extinction

It is the date of death of the last individual of that species.

Give reasons for:

1- Removing trees of tropical forests is one of the most important factors of extinction.

Because, cutting down forests causes living organisms to be stray and homeless.

2- Bald eagle is from endangered species.

Because, it feeds on fish that contain poisonous matter that is being dumped in lakes and rivers.

3- The desert ecosystem is significantly affected by the absence of one its species.

Due to the absence of alternative that compensates the absence of species.

4- UNESCO has chosen Wadi Hetan area as the best world heritage area for whales skeletons.

Because it contains complete whales, fossils 40 million years ago.

5- Bluestone is an important natural protectorate.

Because, it protects grey bear from the danger of extinction.

6- Scientists attempt to establish a gene bank for some types of living organisms.

To protect rare and endangered living organisms.

7- Scarcity of bamboo plant.

Because it doesn't blossom except once every 100 year.

8- Disappearance of papyrus upper Nile.

Due to drying of swamps where they grow.

9- Ammonites fossil is classified as a mold fossil.

Due to formation of a replica of the internal details of a shell of ammonites.

10- Formation of petrified woods fossils.

Due to replacing the organic matter of wood by silica part by part.

11- Naming the petrified forest with wood mountain.

Because, it contains petrified woods which look like rocks.

12- The petrified woods are considered from fossils although they look like rocks.

Because, they give us the details about the life of once an old plant.

13- Gebel El-Mokattam was a part of a sea floor more than 35 million years ago.

Due to the presence of nummulites fossils in the limestone rocks of Gebel El-Mokattam.

I - Lesson One :

1 – Elements have been arranged (organized) (classified) in order to.....

a. ease (facilitate) their study
b. find the relation between elements and their properties
c. (a) and (b)
d. no correct answer

2 – The most important attempts of elements classification is (are).....

a. Mendeleev's periodic table
b. Mosely's periodic table
c. the modern periodic table
d. all the previous answers

3 – The first real periodic table is.....

a. Mendeleev's periodic table
b. Mosely's periodic table
c. the modern periodic table
d. all the previous answers

4 – The number of elements in Mendeleev's periodic table is.....elements

a. 92
b. 67
c. 76
d. 118

5 – Mendeleev organized the elements of similar physical and chemical properties in vertical columns known as.....

a. periods
b. groups
c. tables
d. rows

6 – Mendeleev classified the elements of each group into.....sub-groups

a. 7
b. 2
c. 4
d. 3

7 – The scientific idea upon which the elements are classified in Mendeleev's periodic table is.....

a. arranging elements in an ascending order according to atomic weights
b. arranging elements in an ascending order according to atomic numbers
c. arranging elements in a descending order according to atomic weights
d. arranging elements in a descending order according to atomic numbers

8 – Mendeleev discovered that the atomic weight of elements.....on moving from the left side to the right side through the period

a. increases b. decreases c. remains constant

9 – Mendeleev discovered that the properties of elements were repeated periodically by the beginning of each new.....

a. group b. period c. cell

10 – The scientist who left vacancies in his table to be filled with suitable discovered elements in future is.....

a. Mosely b. Rutherford c. Bohr d. Mendeleev

11 – One of the advantages of Mendeleev's table that is correcting the wrongly estimated .....of some elements

a. atomic numbers b. electron numbers c. atomic weights

12 – Mendeleev made a disturbance in the ascending order of the atomic weights of some elements to put them in.....that suit their properties

a. periods b. groups c. tables d. places

13 – Mendeleev had to deal with the isotopes as.....elements

a. similar b. same c. different d. identical

14 – The nucleus of the atom contains.....

a. negative electrons b. negative protons c. positive protons

15 – The scientist who discovered that the nucleus of the atom contains positively charged protons is.....

a. Bohr b. Mendeleev c. Rutherford d. Mosely

16 – The English scientist Mosely discovered after studying x-rays properties that the periodic properties of elements are related to their.....

a. atomic numbers b. atomic weights c. mass numbers

17 - .....added zero group that includes inactive gases

a. Mendeleev b. Mosely c. Bohr d. Rutherford

18 – The scientist.....had discovered the **main energy levels**

a. Mosely
b. Hofmann
c. Bohr
d. Mendeleev

19 – The number of energy levels in the heaviest known atom is.....levels

a. 5 b. 7 c. 9 d. 11

20 – The scientific idea upon which the elements are categorized (arranged) in the modern periodic table is arranging of elements .....

a. according to their atomic numbers
b. according way of filling of energy sublevels with electrons
c. according to their atomic masses
d. (a) and (b) are correct answers

21 – The number of known elements in the modern periodic table till now is.....

a. 18 b. 26 c. 92 d. 118

22 – The number of elements which exist in nature is.....

a. 26 b. 95 c. 118 d. 92

23 – The number of elements which are prepared artificially is.....

a. 92 b. 26 c. 23 d. 1

24 – The modern periodic table consists of.....horizontal periods

a. 18 b. 118 c. 7 d. 6

25 – The modern periodic table consists of.....vertical groups

a. 18 b. 7 c. 118 d. 92

26 – The elements of s-block are located on the.....side of the table

a. left b. right c. middle

27 – The elements of s-block are arranged in.....groups

a. 5 b. 3 c. 7 d. 2

28 – The block that contains groups (1A) and (2A) is called.....block

a. s b. p c. d d. f

29 – The elements of p-block are located on the.....side of the table

a. left b. right c. middles

30 – Groups of p-block take the letter A except group.....

a. 1A b. 2A c. 8 d. zero

31 – The elements of p-block are arranged in.....groups

a. 2 b. 7 c. 6 d. 5

32 – The block that contains groups (3A) and (7A) is called.....block

a. s b. p c. d d. f

33 – Nobel gases are located in group.....

a. 7A b. 8 c. 17 d. 18

34 – The new number of zero group is.....

a. Zero b. 17 c. 18 d. 16

35 – Noble (inert) gases are located in.....block

a. s b. p c. d d. f

36 – Elements of d-block are located at the.....of the modern periodic table

a. middle
b. bottom
c. left
d. right

37 – Groups of d-block take the letter B except group.....

a. 1B
b. 2B
c. 8
d. Zero

38 – Elements of d-block are arranged in.....groups

a. 5 b. 10 c. 15 d. 7

39 – Elements of d-block are known as.....elements

a. lanthanides b. actinides c. transition

40– The transition elements **starts** to **appear** from the.....period

a. 1st b. 2nd c. 3rd d. 4th

41 – The **number** of **elements** in **period** (4) is...the **number** of **elements** in **period** (3)

a. more than b. less than c. equal to d. double

42 – Elements of f-block are located at the.....of the modern periodic table

a. middle b. bottom c. left d. right

43 – Lanthanides and actinides are located in the.....block

a. s b. p c. d d. f

44 – The number of energy levels occupied by electrons in the atom of an element indicates its.....

a. atomic number
b. mass number
c. group number
d. period number

45 – The number of electrons in the outermost energy level of the atom of an element indicates its.....number

a. atomic b. mass c. group d. period

46 – The element $_{12}X$ lies in.....in the modern periodic table

a. period (2) and group (2A)
b. period (2) and group (3A)
c. period (3) and group (2A)
d. period (3) and group (4A)

~~47~~ – **Helium** lies in group.....

a. 1A b. 2A c. 15 d. 18 (zero)

48 – The element which its atomic number (**2**) is.....

a. transition element
b. an inert gas
c. metallic element
d. halogen element

49 – The element which its atomic number (**18**) is.....

a. transition element
b. an inert gas
c. metallic element
d. halogen element

~~50~~ – The **number** of **elements** in the **3rd period** of the **modern periodic table** is.....

a. 2 b. 8 c. 18 d. 32

51 – The number of electrons which saturate the first four energy levels can be obtained (calculated) from the relation.....

a. $2n$ b. $2n^3$ c. $2n^2$

52 – The **atomic number** of elements equals.....

a. the sum of the numbers of neutrons inside the nucleus
b. the sum of the numbers of electrons rotating in its energy levels
c. the number of protons inside the nucleus
d. (b) and (c) are correct

53 – The number of negative electrons in the atom at its normal state equals.....

a. number of protons
b. number of neutron
c. twice the number of protons
d. half the number of neutrons

54 – The number of protons and neutrons inside the nucleus of the atom of an element is known as.....

a. atomic number
b. mass number
c. period number
d. group number

55 – The atomic number of an element is an integer and it increases from the preceding element in the same period by.....electron (s)

a. 1 b. 2 c. 3 d. 4

56 – The **atomic number** of an element which lies in **period 4** and **group 2A** is.....

a. 4 b. 18 c. 12 d. 20

57 – The element which locates in **period (3)** and **group (3A)** is.....

a. $_{13}Al$ b. $_{5}B$ c. $_{11}Na$ d. $_{15}P$

58 – The **atomic number** of an element exists in **group (7A)** and **period (2)** is.....

a. 12 b. 7 c. 9 d. 17

~~59~~ – An element in the **third** period and group number **13**, the number of neutrons in its nucleus equals 14, so its mass number equals.....

a. 27 b. 9 c. 15 d. 20

60 – Elements of **group (6A)** in the periodic table have the same.....

a. number of protons
b. number of energy levels occupied by electrons
c. number of neutrons
d. number of electrons in the outer levels

61 – In the periodic table, elements which are **identical** in **properties** lie in the same...

a. period b. group c. nucleus d. row

62 – The chemical **properties** of **calcium** ($_{20}$**Ca**) are **similar to** those of.....

a. $_{19}K$ b. $_{12}Mg$ c. $_{25}Mn$ d. $_{3}Li$

~~63~~ – The element whose **atomic number** is (17) is **similar** in its **chemical construction** to the element which its **atomic number** is.....

a. 2 b. 7 c. 9 d. 19

64 – Which of the following belongs to the **same group** in the periodic table?.....

a. $_{11}Na$, $_{6}C$ b. $_{11}Na$, $_{3}Li$ c. $_{11}Na$, $_{29}Cu$ d. $_{11}Na$, $_{10}Ne$

65 – All the following elements are located in group (2A) ***except***.....

a. $_{4}Be$ b. $_{20}Ca$ c. $_{11}Na$ d. $_{12}Mg$

66 – Elements of the **same period** in the modern periodic table have the same...

a. number of protons
b. number of energy levels occupied by electrons
c. number of neutron
d. number of electrons in the outer levels

67 – In the periodic table, elements which are **different** in **properties** lie in the same...

a. period
b. group
c. nucleus
d. column

68 – Which of the following elements in the **same period** with $_{12}$**Mg**?.....

a. $_{7}N$ b. $_{15}P$ c. $_{3}Li$ d. $_{20}Ca$

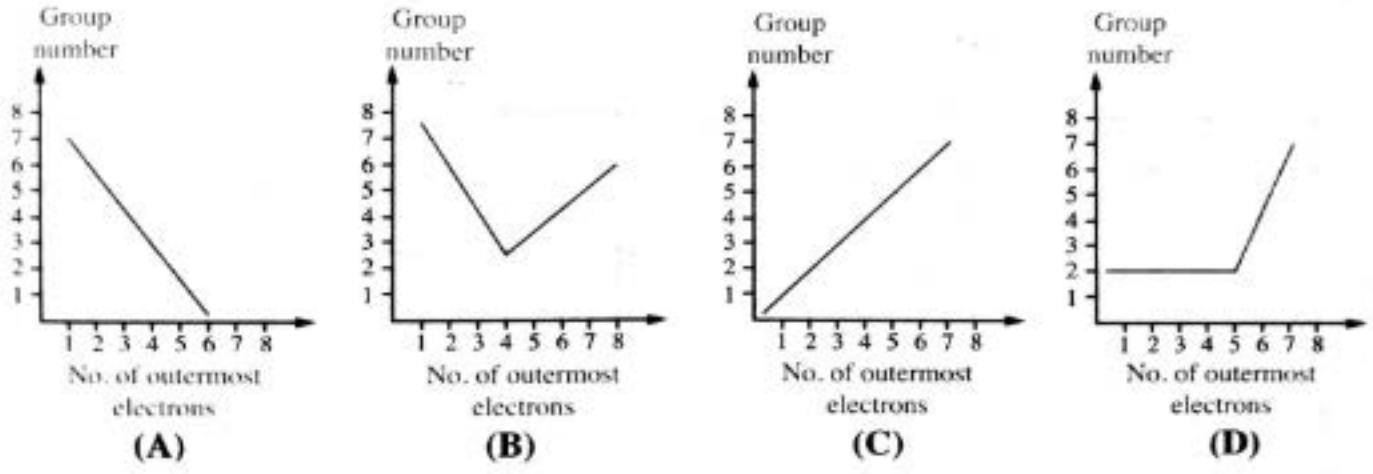
69 – Which of the following elements locates in the **third period**?.....

a. $_{7}N$ b. $_{15}P$ c. $_{3}Li$ d. $_{19}K$

~~70~~ – Two elements $_{15}{}^{31}$**P** and $_{16}{}^{32}$**S** are similar in.....

a. number of group and protons
b. number of period and neutrons
c. number of group and neutrons
d. number of period and protons

71 – Which of the following graphs represents the **relation** between the **number of electrons in the outermost energy level** and the **group number**, through the 3rd period in the modern periodic table? Why?



2 - Lesson Two :

1 – The atomic radius is used as a measurement of the atomic size of the atom and its measuring unit is.....

a. metre
b. millimeter
c. nanometre
d. picometre

2 – In groups, by increasing the atomic number.....

a. atomic size decreases
b. atomic size increases
c. atomic radius increases
d. no correct answer

3 – In periods, by increasing the atomic number.....

a. atomic size decreases
b. atomic size increases
c. atomic radius increases
d. no correct answer

4 – .....is the element that has the smallest atomic size in the periodic table

a. F b. O c. Cs d. Na

5 - .....is the element that has the largest atomic size the periodic table

a. F b. O c. Cs d. Na

– In group (1A), the atomic size of rubidium ($_{37}$Rb) is greater than that of.....

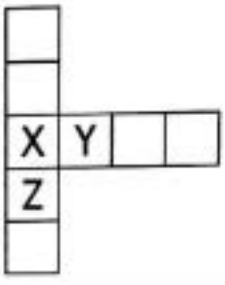
a. $_{3}$Li
b. $_{11}$Na
c. $_{19}$K
d. (a), (b) and (c)

– In period (2), the atomic size of oxygen ($_{8}$O) is greater than that of.....

a. $_{6}$C b. $_{9}$F c. $_{3}$Li d. $_{5}$B

– In the opposite figure,.....represents the ascending arrangement for the element (X, Y and Z) according to the atomic size

a. Z > Y> X
b. Y < X < Z
c. Y > Z > X
d. X < Y < Z



6 – From the polar compounds is (are).....

a. ammonia molecule
b. water molecule
c. methane molecule
d. (a) and (b)

7 – Which of the following is a metallic element?.....

a. $_{12}Mg$
b. $_{17}Cl$
c. $_{8}O$
d. $_{10}Ne$

8 – During the chemical reactions, metal atoms tend to.....

a. lose electrons and change into negative ions
b. gain electrons and change into negative ions
c. lose electrons and change into positive ions
d. gain electrons and change into positive ions

9 – The electronic structure of the positive ions is similar to that of the nearest.....

a. preceding inert gas
b. following inert gas
c. next inert gas
d. similar inert gas

10 – Positive ion carries a number of positive charges equal to the number of.....

a. gained electrons
b. lost electrons
c. shared electrons
d. lost protons

11 – All the followings have the same electronic configuration of neon ($_{10}Ne$) atom except.

a. Al^{+3}
b. Na^{+}
c. Li^{+}
d. Mg^{+2}

12 – The electronic structure of sodium ion (Na^{+}) is similar to that of.....

a. $_{7}N$
b. $_{18}Ar$
c. $_{10}Ne$
d. $_{8}O$

13 – The electronic structure of magnesium ion (Mg^{+2}) is similar to all of the following except.....

a. Na^{+}
b. $_{10}Ne$
c. Al^{+3}
d. $_{18}Ar$

14 – An element (Y), its atomic number is 13, so the electronic configuration of its ion is...

a. 2.,8,3
b. 2,8
c. 2,8,8
d. 2,8,8,3

15 – An element (X), its atomic number is 12, so the number of electrons in its ion equals.

a. 10 b. 15 c. 17 d. 18

16 – The difference between sodium atom ($_{11}Na$) and sodium ion (Na^+) is the number of...

a. protons
b. electrons
c. energy levels
d. (b) and (c)

~~17~~ – The number of electrons located in the ***ion*** of trivalent metallic element whose electrons are arranged in three energy levels is.....

a. 3 b. 8 c. 10 d. 13

.....

.....

.....

18 – Which of the following is a nonmetallic element?.....

a. $_{11}Na$ b. $_{12}Mg$ c. $_{13}Al$ d. $_{17}Cl$

19 – During the chemical reactions, nonmetal atoms tend to.....

b. lose electrons and change into negative ions
c. gain electrons and change into negative ions
d. lose electrons and change into positive ions
e. gain electrons and change into positive ions

20 – The electronic structure of the negative ions is similar to that of the nearest.....

a. preceding inert gas
b. following inert gas
c. previous inert gas
d. similar inert gas

21 – Negative ion carries a number of negative charges equal to the number of.....

a. gained electrons
b. lost electrons
c. shared electrons
d. lost protons

22 – All the followings have the same electronic configuration of neon ($_{18}Ar$) atom except

a. P^{-3} b. S^{-2} c. Cl^- d. Na^+

23 – The electronic structure of sulphur ion (S^{-2}) is similar to that of.....

a. $_{7}N$ b. $_{18}Ar$ c. $_{10}Ne$ d. $_{8}O$

24 – The electronic structure of phosphorus ion (P^{-3}) is similar to all of the following except.....

a. $_{18}Ar$ b. Cl^{-} c. P^{-3} d. Na^{+}

25 – An element (Y), its atomic number is 17, so the electronic configuration of its ion is...

a. 2,8,7 b. 2,8,8 c. 2,8,8,7 d. 2,8,1

26 – An element (X), its atomic number is 15, so the number of electrons in its ion equals

a. 10 b. 17 c. 18 d. 20

27 – The difference between chlorine atom ($_{17}Cl$) and chloride ion (Cl^{-}) is the number of..

a. electrons
b. protons
c. energy levels
d. (a) and (c)

~~28~~ – The nucleus of X^{-2} ion is surrounded by 18 electrons revolve around it and the mass number of this ion equals 32, so the number of electrons in the X atom is.....and the number of its neutrons is.....

a. 16, 23 b. 18, 23 c. 18, 21 d. 16, 16

.....

.....

.....

29 – All the following from the semi-metals (metalloids) except.....

a. tellurium b. silicon c. boron d. bromine

30 – Each period in the periodic table starts with.....

a. metal b. nonmetal c. metalloid d. inert gas

31 – Each period in the periodic table ends with.....

a. metal b. nonmetal c. metalloid d. inert gas

32 – By increasing the atomic number within the period, the.....

a. atomic size decreases
b. metallic property decreases
c. nonmetallic property increases
d. all the previous answers

33 – By increasing the atomic number within group (1A), the.....

a. atomic size decreases
b. nonmetallic property increases
c. metallic property increases
d. all the previous answers

34 – The strongest metallic elements lies in group.....

a. 1A b. 7A a. 2A b. zero

35 – The most metallic element in group (1A) is.....

a. Na b. Cs c. K d. Li

36 – The least metallic element in group (1A) is.....

a. Na b. K c. Cs d. Li

37 – By increasing the atomic number within group (7A), the.....

a. atomic size decreases
b. metallic property increases
c. nonmetallic property decreases
d. all the previous answers

38 – Which of the following metals react with dilute hydrochloric acid?.....

a. C b. Cu c. S d. Zn

39 – All the following elements **don't** react with dilute HCl acid **except**.....

a. Cu
b. Zn
c. Mg
d. (b) and (c)

40 – When magnesium reacts with dilute hydrochloric acid, this produces.....

a. magnesium oxide and hydrogen gas evolves
b. magnesium chloride and oxygen gas evolves
c. magnesium chloride and hydrogen gas evolves
d. no correct answer

41 – Metal oxides (as sodium oxide) are.....oxides

a. acidic b. basic c. amphoteric d. neutral

42 – Magnesium reacts with oxygen giving.....

a. $Mg(OH)_2$ b. MgO c. $MgCl_2$ d. $MgSO_4$

43 – Magnesium oxide dissolves in water giving.....

a. $Mg(OH)_2$ b. MgO c. $MgCl_2$ d. $MgSO_4$

44 – Magnesium hydroxide turns the colour of litmus solution into.....

a. red b. blue c. orange d. violet

45 – All the following are related to MgO except.....

a. it is a basic oxide
b. it is a metal oxide
c. its solution turns litmus into red
d. its solution turns litmus into blue

46 – Sodium oxide (Na_2O) and calcium oxide (CaO) are from.....oxides

a. amphoteric c. nonmetallic
b. acidic d. basic

47 – When sodium or potassium reacts with water,.....gas evolves

a. N_2 b. O_2 c. H_2 d. CO_2

48 - .....react very slowly with cold water

a. Ca – Mg b. K – Na c. Zn – Fe d. Cu - Ag

49 - .....react with hot water vapour at high temperatures

a. Ca – Mg b. K – Na c. Zn – Fe d. Cu - Ag

50 – All the following metals react with water except.....

a. K b. Mg c. Fe d. Ag

51 – Nonmetal oxides (as carbon dioxide) are.....oxides

a. acidic
b. basic
c. amphoteric
d. no correct answer

52 – Carbon reacts with oxygen giving.....

a. CO
b. CO_3
c. CO_2
d. Na_2O

53 – Carbon dioxide dissolves in water giving.....

a. H_2CO_3
b. HCO_2
c. H_3CO_2
d. H_2CO

54 – Carbonic acid turns the colour of litmus solution into.....

a. red
b. blue
c. orange
d. violet

55 – All the following are related to CO_2 except.....

a. it is an acidic oxide
b. it is a nonmetal oxide
c. its solution turns litmus into red
d. its solution turns litmus into blue

56 – Sulphur oxide is from.....oxides

a. acidic
b. basic
c. amphoteric
d. neutral

57 – Which of the following is a basic oxide.....

a. CO_2
b. $Mg(OH)_2$
c. Na_2O
d. (b) and (C)

58 – Which of the following is an acidic oxide.....

a. CO_2
b. SO_3
c. Na_2O
d. (a) and (b)

59 – The oxide which dissolves in water and produces an alkali is.....

a. CO_2
b. MgO
c. CaO
d. (b) and (C)

60 – The oxide which dissolves in water and produces an acid is.....

a. CO_2
b. $Mg(OH)_2$
c. Na_2O
d. (b) and (C)

61 – Al_2O_3 is known as.....oxide

a. acidic
b. basic
c. amphoteric
d. neutral

62 – The 3rd period starts with elements their oxides as the following.....

a. acidic, amphoteric then basic
b. acidic, basic then amphoteric
c. basic, acidic then amphoteric
d. basic, amphoteric then acidic

3 - Lesson Three :

1 – Elements of group (18) are known as.....

a. alkali metals
b. halogens
c. nobel gases
d. no correct answer

2 – Hydrogen element belongs to group.....

a. 1A b. 2A c. 6A d. 7A

3 – Elements of group (1A) are known as.....

a. alkali metals
b. halogens
c. nobel gases
d. no correct answer

4 – Alkali metals are considered from.....block groups

a. s b. p c. d d. f

5 - .....is (are) from alkali metals

a. Sodium b. Magnesium c. Rubidium d. (a) and (c)

6 – Which of the following elements is an alkali metal which lies in period 3?...

a. $_3Li$ b. $_{12}Mg$ c. $_{11}Na$ d. $_{19}K$

7 – Most of alkali metals have.....density

a. high b. low c. medium d. moderate

8 – All these alkali metals float on water surface except.....

a. Li b. Na c. K d. Cs

9 – At the ordinary temperature, all alkali metals are found in.....state

a. solid b. liquid c. gaseous d. (a) and (b)

10 – The outermost energy level of any alkali metal contains.....electron(s)

a. 1 b. 3 c. 5 d. 7

11 – The valency of alkali metals is.....

a. monovalent b. divalent c. trivalent d. (a) and (c)

12 – All these elements are monovalent except.....

a. $_{11}Na$ b. $_{19}K$ c. $_{20}Ca$ d. $_{3}Li$

13 – Elements which have atomic numbers.....are called alkali metals

a. 2,8,16 b. 2,10,18 c. 3,11,19 d. 4,12,20

14 - .....form positive ions during the chemical reactions

a. Nobel gases
b. Nonmetals
c. Halogens
d. Alkali metals

15 - .....are kept under the surface of kerosene in the lab

a. Alkali metals
b. Halogens
c. Inert gases
d. Alkaline earth metals

16 – Sodium and potassium are kept under the surface of.....

a. water
b. kerosene
c. alcohol
d. benzene

17 – The metallic property of alkali metals increases by increasing their.....

a. electronegativity
b. atomic size
c. valency
d. all are correct

18 - .....element has higher chemical reactivity

a. Sodium b. Potassium c. Lithium d. Cesium

19 – The strongest (most active) metal lies in group.....

a. 7A b. 1B c. 1A d. 2A

20 – The most active metal in group (1A) is.....

a. Na b. Cs c. K d. Li

21 – Elements of group (1A) are dissolved in water forming.....solutions

a. acidic b. basic c. neutral d. red

22 – The gas evolved on reacting alkali metal with water is.....

a. oxygen b. nitrogen c. hydrogen d. helium

23 - .....reacts with water more strongly than sodium

a. Potassium
b. Rubidium
c. Cesium
d. All are correct

24 – All the following are from the properties of alkali metals except they.....

a. have low densities
b. are active elements
c. conduct heat and electricity
d. are divalent elements

25 – Alkali metals have the following properties except.....

a. they have low density
b. they conduct heat
c. they conduct electricity
d. they don't react with water

26 – Rubidium (Rb) element lies in group (1A) and period....in the periodic table

a. 2 b. 3 c. 4 d. 5

27 – Elements of group (7A) are known as.....

a. inert gases
b. halogens
c. alkali metals
d. alkaline earth metals

28 – Halogens are considered from.....block groups

a. s b. p c. d d. f

29 - .....is considered from halogens

a. Na b. Cl c. He d. Ca

30 - .....is (are) from the halogens that exist(s) in a gaseous state

a. Bromine b. Chlorine c. Fluorine d. (b) and (c)

31 – The halogen which exists in a liquid state is.....

a. bromine b. iodine c. fluorine d. chlorine

32 – The halogen which is found in a solid state is.....

a. bromine b. iodine c. fluorine d. chlorine

33 – All of these halogens exist in a gaseous state except.....

a. iodine b. fluorine c. chlorine d. (b) and (c)

34 – Halogens are.....conductors of heat and electricity

a. good b. bad c. moderate d. all of them

35 – The outermost energy level of any halogen contains.....electron(s)

a. 1 b. 3 c. 6 d. 7

36 – The valency of halogens is.....

a. tetravalent b. divalent c. monovalent d. (a) or (b)

37 - .....form negative ions during the chemical reactions

a. inert gases
b. halogens
c. alkali metals
d. alkaline earth metals

38 – The molecule of halogens is composed of.....atom(s)

a. 1 b. 2 c. 3 d. 4

39 – Halogens don't found in an elementary state except.....which is prepared artificially

a. oxygen b. chlorine c. astatine d. iodine

40 – The halogen that can be prepared artificially is.....

a. Cl b. I c. At d. Br

41 – The most active element in group (7A) is.....

a. F b. Cl c. I d. At

42 - .....in its salt solution

a. Chorine replaces bromine
b. Bromine replaces fluorine
c. Iodine replaces chlorine
d. Iodine replaces fluorine

43 – All of these elements can replace bromine in its salt solutions except.....

a. fluorine b. chlorine c. iodine d. (a) and (b)

44 – Bromine is obtained when chlorine reacts with.....solutions

a. sodium bromide
b. potassium bromide
c. sodium iodide
d. (a) or (b)

45 – Liquid sodium is used in.....

a. nuclear reactors
b. computers
c. fridges
d. sterilization

46 – The element which emits gamma rays is.....

a. ^{60}Co b. ^{23}Na c. ^{14}N d. ^{35}Cl

47 - .....rays are used sterilizing food

a. Alpha b. Beta c. Gamma d. Laser

48 – The semi-metal (metalloid) that is used in the manufacture of transistor is....

a. S
b. Si
c. Na
d. K

49 – Cornea is preserved under the surface of.....

a. nitrogen gas
b. liquid paraffin
c. liquefied nitrogen
d. helium gas

50 – The boiling point of liquefied nitrogen is.....

a. 0°C b. 194°C c. -96°C d. -196°C

51 – The valency of nobel gases is.....

a. monovalent b. divalent c. trivalent d. zero

4 – Lesson Four :

1 – Water has several uses in.....

a. agricultural field
b. industrial field
c. personal field
d. all the them

2 – Water molecule is composed of.....

a. one oxygen atom and one hydrogen atom
b. two oxygen atom and one hydrogen atom
c. one oxygen atom and two hydrogen atoms
d. two oxygen atoms and two hydrogen atoms

3 – In water molecule, oxygen atom is linked with two hydrogen atoms by two...

a. ionic
b. single covalent
c. double covalent
d. hydrogen

4 – In water molecule, the angle between the two hydrogen atoms is.....

a. 64°
b. 104.5°
c. 104°
d. 140.5°

5 – The covalent bond in a molecule of water is (are).....bonds(s)

a. one double
b. one triple
c. two single
d. two double

6 – The electronegativity of oxygen is.....than that of hydrogen

a. equal to
b. higher than
c. less than
d. (a) and (b)

7 – There are.....bonds among the water molecules

a. ionic
b. covalent
c. hydrogen
d. (b) and (c)

8 -.....is a weak electrostatic attraction force that arises between the molecules of polar compounds as water and ammonia

a. Hydrogen bond
b. Covalent bond
c. Ionic bond
d. (a) and (b)

9 – Hydrogen bond is.....than covalent bond

a. weaker
b. stronger
c. lighter
d. (a) and (c)

10 - .....is responsible for the unique properties of water

a. Hydrogen bond
b. Covalent bond
c. Ionic bond
d. (a) and (b)

11 – Water exists in.....in normal temperatures

a. solid state only
b. gaseous state only
c. liquid state only
d. all the previous answers

12 – The pure water boils at.....°C

a. 100
b. 37
c. 42
d. 0

13 - The pure water freezes at.....°C

a. 4
b. 100
c. 0
d. 37

14 – The density of pure water.....on freezing

a. increases
b. decreases
c. is doubled
d. remains constant

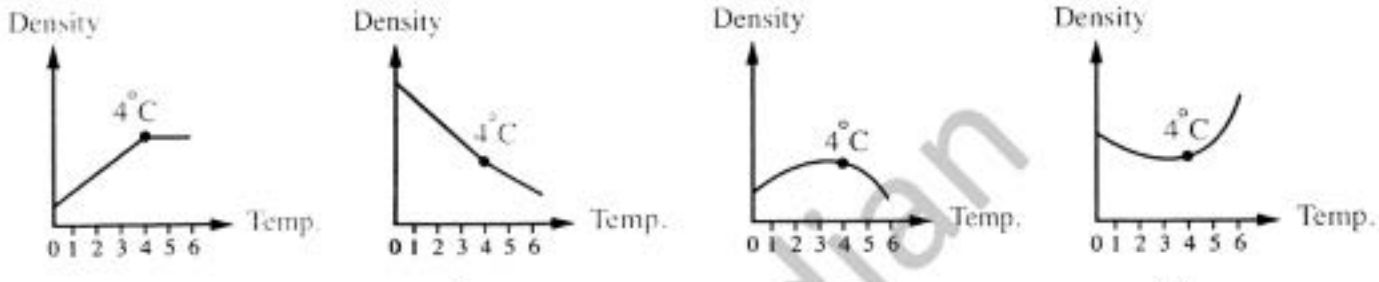
15 – The volume of pure water.....on freezing

a. increases
b. decreases
c. is doubled
d. remains constant

16 – The mass of pure water.....on freezing

a. increases
b. decreases
c. is doubled
d. remains constant

17 – The figure.....represents the change in water density by changing the temperature



a. b. c. d.

18 – The highest value of density of pure water is at.....°C

a. 0 b. 4 c. 100 d. 42

19 – The lowest value of density of pure water is at.....°C

a. 0
b. 4
c. 100
d. 37

20 – The density of pure water in its solid state is.....

a. less than its density in liquid state
b. equal to its density in vapour state
c. greater than its density in liquid state
d. less than its density in vapour state

~~21~~ – The ***ratio*** between the density of water at 4°C to its density at zero °C is.....one

a. more than b. less than c. equal to

~~22~~ – The density of pure water in the solid state is.....1 gm/cm^3

a. more than b. less than c. equal to

23 – The volume of a quantity of water at 10°C is...the volume of the same quantity at 1°C

a. more than b. equal to c. less than

24 – A bottle is filled completely with water and put closed in the freezer.

After sometime, it breaks because when water freezes.....

a. its density becomes less than its volume
b. its volume increases without a change in its density
c. its volume increases and its density decreases
d. its density increases and its volume decreases

25 – When we put 1 litre of water at 4°C in the freezer to change it into ice, its mass.....

a. increases
b. decreases
c. is doubled
d. remains constant

26 – The snow crystals has.....shape

a. octagonal b. pentagonal c. hexagonal d. quadrigonal

27 – Ice crystals are characterized by all the following except they have.....

a. low density
b. high density
c. large volume
d. hexagonal shape

28 – Water has a/an.....effect on litmus paper

a. basic b. neutral c. acidic d. alkaline

29 – Hofmann's voltameter is used in water.....

a. analysis b. electrolysis c. ionization d. acidification

30 – During the electrolysis of water, we add some drops of.....into water

a. dilute HCl
b. conc. HCl
c. dilute H_2SO_4
d. conc. H_2SO_4

31 – During water electrolysis, oxygen gas evolves at the.....

a. anode b. cathode c. (a) or (b)

32 – During water electrolysis, hydrogen gas evolves at the.....

a. anode b. cathode c. (a) or (b)

33 – The volume of hydrogen gas evolves from water electrolysis is.....

a. half of oxygen volume
b. double the oxygen volume
c. equal to the oxygen volume
d. four times oxygen volume

34 – Electrolysis of acidified water gives hydrogen gas and oxygen gas at a ratio of.....

a. 1 : 2
b. 2 : 1
c. 1 : 3
d. 2 : 3

35 – In the electrolysis of acidified water by using Hofmann's voltameter. If the volume of hydrogen gas evolves is 40 Cm^3, so the volume of oxygen gas that evolves is.....cm^3

a. 10 b. 20 c. 40 d. 80

~~36~~ – If the summation of the volume of two evolved gases at the two poles of Hofmann's voltameter is 60 cm^3, so the volume of oxygen and hydrogen gases ***respectively***.....

a. 20 cm^3 – 40 cm^3
b. 40 cm^3 – 20 cm^3
c. 30 cm^3 – 30 cm^3
d. 10 cm^3 – 50 cm^3

37 – A liquid boils at 100°C. What is the other property that confirms that it is pure water?.....

a. It dissolves table sugar
b. Its density decreases on freezing
c. It has a neutral effect on litmus paper
d. It evaporates on heating

38 – All the following among the properties of water except.....

a. it has a neutral effect on litmus paper
b. it is a polar compound
c. its volume increases by freezing
d. it decomposes by heat into elements

39 – All the following are natural water pollutants except.....

a. volcanic eruption
b. death of living organisms
c. lightening accompanied thunder storms
d. discharge of factories residues

40 – Mixing animals and human wastes with water causes.....pollution

a. chemical b. biological c. thermal d. radiant

41 – All the following diseases are caused by biological pollution except.....

a. cancer b. bilharzia c. hepatitis d. typhoid

42 – Increasing the concentration of.....in drinking water causes death of brain cells

a. lead b. mercury c. arsenic

43 – Increasing the concentration of.....in drinking water causes blindness

a. lead b. mercury c. arsenic

44 – Increasing the concentration of.....in drinking water causes liver cancer

a. lead b. mercury c. arsenic

45 - .....pollution causes the death of marine creatures

a. chemical b. thermal c. radiant d. biological

46 – Which of following behaviours causes radiant pollution?.....

a. Leakage of radioactive materials from nuclear reactors
b. Using water in cooling the nuclear reactors
c. (a) and (b) are correct

47 – Putting water in empty glass bottles causing the plastic reacts with.....gas

a. hydrogen b. chlorine c. fluorine d. oxygen

48 – The water of a pool contains minerals, oxygen, organic fertilizers, animal wastes and green algae. What is the number of pollutants found in it?.....

a. 1 b. 2 c. 3 d. 4

5 - Lesson Five :

1 – The height of the atmospheric envelope is about.....above sea level

a. 100 km b. 1000 km c. 1013.25 km d. 1000 mb

2 – Atmospheric pressure is the..of an air column of an atmospheric height on a unit area

a. mass b. volume c. weight d. density

3 – The measuring unit(s) of atmospheric pressure is (are).....

a. bar
b. newton
c. millimeter
d. (a) and (c)

4 – Normal atmospheric pressure at sea level equals.....at sea level

a. 1000 mb b. 1000 bar c. 1103.25 mb d. 1013.25 mb

5 - .....of the mass air is located in a region extends between 3 km and 16 km height

a. 10 % b. 40 % c. 50 % d. 90 %

6 – Molecules of air are very close to each other at.....

a. sea surface
b. 3 km height
c. 1 km height
d. 16 km height

7 – The density of air....., by increasing the elevation above the sea level

a. increases
b. decreases
c. is doubled
d. remains fixed

8 – The density of the air at the top of a mountain is.....its density at its foot

a. more than
b. less than
c. equals
d. not related

9 – By decreasing the elevation above sea level, the atmospheric pressure....

a. increases
b. decreases
c. is doubled
d. doesn't change

10 – By increasing the elevation above sea level, the atmospheric pressure.....

a. increases
b. decreases
c. is doubled
d. doesn't change

11 – As the density of the air increases, the atmospheric pressure.....

a. increases
b. decreases
c. is doubled
d. doesn't change

12 – As the density of the air decreases, the atmospheric pressure.....

a. increases
b. decreases
c. is doubled
d. doesn't change

13 – The atmospheric pressure at the top of a mountain is.....the atmospheric pressure at the sea level

a. more than
b. less than
c. equals
d. half

~~14~~ – The value of atmospheric pressure may be equal.....mb at the top of El-Mokattam mountain

a. 1031.25
b. 1016.25
c. 1013.25
d. 1010

15 – The device which is used in measuring the atmospheric pressure is.....

a. barometer
b. ammeter
c. voltmeter
d. (b) and (c)

16 - .....is an instrument that is used to measure the possible day weather

a. barometer
b. aneroid
c. altimeter
d. all the previous answers

17 - .....is an instrument used by pilots to measure their elevation from sea level based on atmospheric pressure

a. barometer
b. aneroid
c. altimeter
d. all the previous answers

18 – The device which is used in measuring the attitude above sea level is....

a. barometer
b. aneroid
c. altimeter
d. all the previous answers

19 – In atmospheric pressure maps, the regions of equal atmospheric pressure are joined together by curved lines called.....

a. isotopes
b. isobar
c. isometric
d. (a) and (b)

20 – The atmospheric envelope consists of.....layers

a. 3
b. 5
c. 4
d. 6

21 – Tropopause is found between.....layers

a. stratosphere and mesosphere
b. mesosphere and thermosphere
c. stratosphere and troposphere
d. (a) or (c)

22 – Stratopause is found between.....layers

a. stratosphere and mesosphere
b. mesosphere and thermosphere
c. (a) or (b)
d. stratosphere and troposphere

23 – Mesopause is found between.....layers

a. stratosphere and mesosphere
b. mesosphere and thermosphere
c. (a) or (b)
d. stratosphere and troposphere

24 - .....layer extends from the sea level to the tropopause

a. stratosphere
b. mesosphere
c. troposphere
d. thermosphere

25 - .....layer extends from tropopause and stratopause

a. stratosphere
b. mesosphere
c. troposphere
d. thermosphere

26 - .....layer extends from stratopause to mesopause

a. stratosphere
b. mesosphere
c. troposphere
d. thermosphere

27 - .....layer extends from mesopause to space

a. stratosphere
b. mesosphere
c. troposphere
d. thermosphere

28 – The disturbed layer is.....

a. stratosphere
b. mesosphere
c. troposphere
d. ionosphere

29 – The thickness of the troposphere layer is about.....km

a. 18 b. 13 c. 1000 d. 14

30 – The atmospheric pressure at tropopause equals.....bar

a. 100 b. 0.1 c. 1013.24 d. (a) or (b)

31 – All the atmospheric phenomena such as rains occur in the.....layer

a. second b. third c. first d. fourth

32 – The troposphere contains about 75% of the atmospheric envelope's.....

a. mass b. weight c. volume d. length

~~33~~ – The total mass of the air which located in the upper three layers of atmospheric envelope is about.....

a. 99 % b. 75 % c. 50 % d. 25 %

~~34~~ – In the lower part of.....layer, more than half of the mass of air is located

a. troposphere
b. stratosphere
c. mesosphere
d. Thermosphere

35 – The troposphere contains about 99% of the atmospheric envelope's.....

a. oxygen
b. nitrogen
c. water vapour
d. carbon dioxide

~~36~~ – The upper three layers of the atmospheric envelope contain.....of water vapour

a. 1 % b. 25 % c. 99 % d. 75 %

37 – Water vapour in troposphere.....the temperature on the Earth

a. organizes b. decreases c. increases d. has no effect

38 – The air moves.....in troposphere layer

a. horizontally b. vertically c. randomly d. (b) or (c)

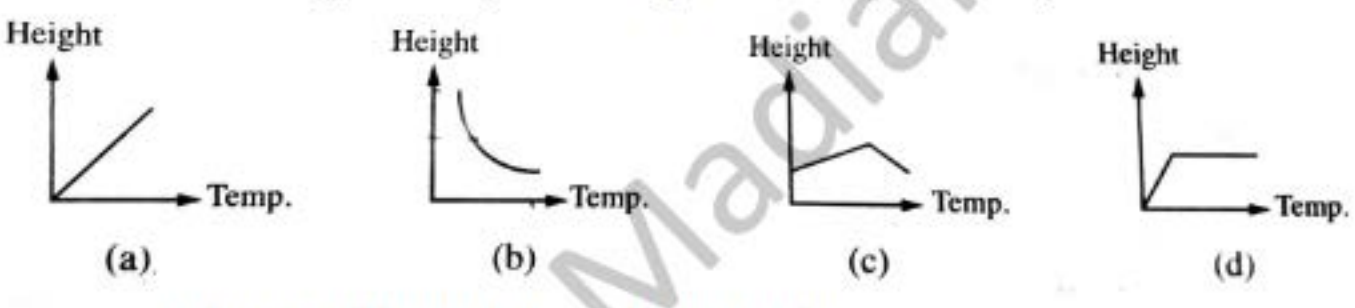
39 – The temperature decreases at the rate of.....°C at 2 km above the Earth's surface

a. 6.5 b. 13 c. 18.5 d. 9.75

40 - The temperature becomes.....°C at tropopause

a. 6.5 b. – 6.5 c. 65 d. – 60

41 – Mention the **change** of **temperature** by transferring 7500 **m** upwards.....



42 - .....is the second layer of atmospheric envelope

a. Troposphere b. Stratosphere c. Mesosphere d. Thermosphere

43 - .....is the region between stratosphere and mesosphere

a. Tropopause b. Stratopause c. Mesopause d. Thermopause

44 – The thickness of the stratosphere layer is about.....km

a. 37 b. 13 c. 1000 d. 50

45 – Ozone layer is formed in.....layer

a. troposphere b. stratosphere c. mesosphere d. thermosphere

46 – The air moves.....in the stratosphere layer

a. horizontally
b. vertically
c. (a) and (b)
d. no correct answer

47 – Pilots prefer to fly their planes in.....

a. troposphere b. stratosphere c. mesosphere d. thermosphere

48 - The coldest atmospheric layer in the atmospheric envelope is.....

a. troposphere b. stratosphere c. mesosphere d. thermosphere

49 – The thickness of the mesosphere layer is about.....km

a. 37 b. 13 c. 1000 d. 35

50 – Luminous meteors are formed in.....layer

a. troposphere
b. stratosphere
c. mesosphere
d. thermosphere

51 – Meteors burn in.....

a. mesosphere
b. ionosphere
c. exosphere
d. stratosphere

52 – The.....layer is much vacuumed layer

a. troposphere
b. stratosphere
c. mesosphere
d. thermosphere

53 – The temperature at the top of mesosphere layer reaches.....

a. 100°C b. - 60°C c. - 90°C d. 1200°C

54 – The hottest atmospheric layer in the atmospheric envelope is.....layer

a. troposphere
b. stratosphere
c. mesosphere
d. thermosphere

55 – The thickness of the thermosphere layer is about.....km

a. 37 b. 13 c. 570 d. 590

56 – The temperature at the top of thermosphere layer reaches.....

a. 100°C b. - 60°C c. - 90°C d. 1200°C

57 – Ionosphere layer is located in the upper part of.....layer

a. troposphere b. stratosphere c. mesosphere d. thermosphere

58 – Ionosphere is surrounded by.....belts

a. magnetic b. electric c. thermal d. light

59 – The charged cosmic radiations are dispersed in the.....layer

a. troposphere b. stratosphere c. mesosphere d. ionosphere

60 – Charged cosmic radiations reflect in.....layer

a. ionosphere b. stratosphere c. mesosphere d. troposphere

61 – The atmospheric envelopes is interfered with the outer space in.....layer

a. exosphere b. thermosphere c. mesosphere d. stratosphere

62 – Satellites orbit in.....of the Earth

a. stratosphere b. thermosphere c. mesosphere d. exosphere

6 – Lesson Six :

1 – Ozone molecule consists of.....

a. one oxygen atom
b. two oxygen atoms
c. three oxygen atom
d. four oxygen atoms

2 – Oxygen molecule splits into two free atoms in stratosphere layer by the effect of.....

a. heat
b. ultraviolet radiations
c. infrared radiations
d. cooling down

3 – Ozone layer is found in.....layer

a. ionosphere b. mesosphere c. stratosphere d. exosphere

4 – The scientist.....proposed that the thickness of ozone layer is about 3mm under the standard temperature and pressure (STP)

a. Newton b. Edison c. Dobson d. Watson

5 – Ozone degree is measured in a unit called.....

a. Dobson b. km c. Nanometer d. mm^2

6 – Degree of ozone at STP conditions is.....Dobson (DU)

a. 100 b. 200 c. 300 d. 400

7 – One Dobson unit is defined as.....

a. 3 mm b. 0.01 mm c. 0.001 m d. 1 mm

8 – Nanometre = ...metres

a. 1×10^{-3}
b. 1×10^{-6}
c. 1×10^{-9}
d. 1×10^{-12}

9 – Ozone layer absorbs.....

a. infrared rays
b. ultraviolet rays
c. X-rays
d. light rays

10 – Ozone layer allows 100% of.....ultraviolet rays to penetrate

a. near
b. medium
c. far
d. (a) and (b)

11 – Ozone layer doesn't allow the passage of.....ultraviolet rays

a. near b. medium c. far d. (b) and (c)

12 – The ozone hole appears over the.....

a. North pole b. South pole c. Middle east d. Equator

13 – The ozone hole increases in.....every year

a. October b. September c. November d. December

14 – All the following cause ozone hole (erosion) except.....

a. aerosols
b. conditioning sets
c. iron oxides
d. concorde aeroplanes

15 - .....compounds are known commercially as Freons

a. Halons
b. Nitrogen oxides
c. Hydrocarbons
d. Chlorofluorocarbon

16 - Chlorofluorocarbon compounds are used as.....

a. solvent substances
b. propellant substances
c. flatting substances
d. all the previous answers

17 - .....is/are used as a coolant in cooling devices

a. Halons
b. Methyl bromide gas
c. Nitrogen oxide
d. Freon

18 - .....is/ are used as an insecticide to preserve agricultural crops

a. Halons
b. Methyl bromide gas
c. Nitrogen oxide
d. Freon

19 - .....is/ are used in extinguishing fires

a. Halons
b. Methyl bromide gas
c. Nitrogen oxide
d. Freon

20 - .....are resulted from burning of fuel in concorde aeroplanes

a. Halons
b. Methyl bromide gas
c. Nitrogen oxides
d. Freon

21 – All the following are from greenhouse gases except.....

a. CO_2
b. O_2
c. CH_4
d. N_2O

22 - .....is/are among the reasons for increasing CO_2 in atmosphere

a. Fossil fuel burning
b. Cutting trees
c. Forests fires
d. All the previous answers

23 – Global warming occurs due to.....

a. increasing carbon dioxide in atmosphere
b. decrease in carbon dioxide in atmosphere
c. cutting trees and forests fires
d. (a) and (c)

24 – Greenhouse effect explains.....

a. water evaporation
b. ozone hole
c. global warming phenomenon
d. (b) and (c)

25 - .....radiation is characterized by great heat effect

a. Infrared b. Ultraviolet c. Visible light d. X-rays

26 – From the negative effects of global warming is/are.....

a. melting the ice at the north and south poles
b. severe climate changes
c. the lack of ozone gas in the atmosphere
d. (a) and (b)

27 – .....is (are) from the extinct animals due the melting of ice in the North and South Poles (as a result of global warming)

a. Blue whales
b. Polar bear
c. Seal
d. (b) and (c)

7 – Lesson Seven :

1 – Fossils are often found in.....rocks

a. metamorphic
b. sedimentary
c. igneous
d. no correct answer

2 – Which of the following terms is more precise in describing the remains and traces of old living organisms that were preserved in the sedimentary rocks?.....

a. Petrification b. The red list c. Extinction d. Fossils

3 – Worm's tunnel fossil is formed because of.....

a. the presence of hard skeleton
b. the activity of worms during their life
c. the death of the worm and rapidly buried in sedimentary rocks
d. the death of the worm and rapidly buried in ice layers

4 – Complete body fossils of ***mammoth*** are found preserved in.....

a. snow
b. amber
c. ammonites
d. (a) and (b)

5 – Complete body fossils of ***insects*** are found preserved in.....

a. snow
b. amber
c. ammonites
d. (a) and (b)

6 – On solidification of the resinous matter secreted by pine tress in the old geological ages, it forms.....

a. amber fossil
b. fossil of a complete body
c. trilobite fossil
d. Nummulites fossil

7 – Ammonites fossil represents a mold of a/ an.....

a. snail
b. elephant
c. insect
d. scorpion

8 – If you are a collector of shells of snails or clams on the beach of the sea.

Which of the following can you make a model for a fossil known as ***a mold?***.....

a. A shell of ammonites snail only
b. A shell of clam only
c. A shell of ammonites and clam together
d. The shells are not suitable for making fossils

9 – When the mud fills up the shell cavities and solidify, then the shell decomposes,..... is produced

a. a solid mold fossil
b. a cast
c. a petrified wood
d. no correct answer

10 – Is the cake is considered as a solid mold? Why?.....

a. Yes, because it carries the same external details of the mold
b. Yes, because it carries the same internal details of the mold
c. No, because it carries the same internal and external details of the mold
d. No, because it doesn't carry any details of the mold

11 – What is the kind of fossils which is formed when a plant leaf falls on a soft sedimentary rock at the beginning of formation then hardening?.....

a. A trace
b. A mold
c. A cast
d. A petrified fossil

12 – Are the dinosaur's eggs considered examples of petrified fossils?.....

a. Yes, because minerals replace whole organic matter part by part
b. Yes, because they carry the internal details of the eggs
c. No, because they aren't considered fossils
d. No, because they show the remains of dinosaurs after its death

13 – What happened when silica replaced the wood of trees' stems and trucks which are older than 35 millions years?.....

a. A complete body fossil had been formed
b. A petrified fossil has been formed
c. A trilobite fossils has been formed
d. A dinosaur's tooth fossil has been formed

14 – To obtain a fossil of any organism, what do you expect available for it?.....

a. A hard skeleton
b. Fast burying after death
c. A medium preserves it from decomposition
d. (a), (b) and (c)

15 – Fossils are important for all of the following ***except***.....

a. determination of sedimentary rocks age
b. studying kinds of metals
c. petroleum exploration
d. figuring out the paleoenvironment

16 - .....are fossils of organisms that had lived for a short period of time in the past and had a wide geographic distribution then become extinct

a. Ferns b. Coral c. Index d. Petrified

17 – Not all fossils are considered as index fossils as they are characterized by.....

a. long range of time and limited geographical range
b. short range of time and limited geographical range
c. long range of time and wide geographical range
d. short range of time and wide geographical range

18 – The fossils that exist in the sedimentary rocks of the Mokattam Mountain are.....

a. ferns b. coral c. Nummulites d. fish

19 - .....fossils indicate that the environment where they lived were hot and rainy tropical

a. Ferns b. Fish c. Nummulites d. Coral

20 - .....fossils indicate that the environment where they lived were clear warm shallow seas

a. Ferns b. Fish c. Nummulites d. Coral

21 – Life started first in.....

a. rivers
b. seas
c. Earth
d. Mountain

22 – The fossil record points to the life evolution in plants from simple to complicated higher forms, and the evidence for that is.....

a. Angiosperms preceded gymnosperms
b. algae preceded mosses and ferns
c. ferns preceded mosses
d. mosses preceded ferns

23 - .....is one of invertebrates that appeared in seas

a. Mammoth
b. Fish
c. Archaeopteryx
d. Trilobite

24 – Which of the following is considered as the evolution of vertebrates?.....

a. Fish → amphibians → mammals → reptiles
b. Ferns →amphibians → reptiles → birds
c. Fish → amphibians → birds → mammals
d. Fish → amphibians → reptiles → birds

25 – Archaeopteryx is the link between.....

a. amphibian and reptiles
b. reptiles and birds
c. mammal and fish
d. reptile and coral

26 – An example of microfossils is.....

a. mammoth
b. ferns
c. radiolaria
d. coral

27 – Which of the following fossils play an important role in petroleum exploration?.....

a. Foraminifera and radiolaria
b. Foraminifera and ammonites
c. Foraminifera and nummulites
d. Ammonites and trilobites

8 – Lesson Eight :

1 – Which of the following statement is **more precise** in describing the concept of the **extinction**?.....

a. The date of death of the last individual of the same species
b. The continuous decrease in the numbers of individuals of the same species without compensation
c. Everything involves livening organisms and non-living things in a certain environment
d. The path of energy takes when it transported from a living organism to another living organism in the environment ecosystem

2 - .....indicate(s) **extinction**

a. Fossils
b. Protectorates
c. Evolution
d. Ecological equilibrium

3 - .....is/ are from the **hypothetical theories** that explains the causes of **macro (mass) extinction**

a. Meteorite impacts with the Earth
b. The violent Earth movements
c. The onset of a long glacial age
d. All the previous answers

4 - .....is/are of the most important causes of extinction in **recent ages**

a. Volcanic eruption
b. Falling of ice bergs
c. Falling of meteorites
d. Overhunting and environmental pollution

5 – All the following are **natural disasters** that **threaten** the **living organisms** except..

a. floods
b. volcanoes
c. drought waves
d. global warming

6 - .....were famous **extinct animals** in the **old** times

a. Dodo bird and mammoth
b. Dinosaurs and quagga
c. Dinosaurs and mammoth
d. Grey bear and passenger pigeon

7 – From the most common **recently extinct** species is/are.....

a. dodo bird b. quagga c. bald eagle d. (a) and (b)

8 - .....is considered the mid-way between **horse** and **zebra**

a. dodo bird
b. quagga
c. Tasmanian cat
d. golden frog

9 - .....is **an extinct bird** that is characterized by the **reduced size** of its wings

a. dodo bird
b. quagga
c. bald eagle
d. golden frog

10 – All of the following are **endangered species** except.....

a. panda bear
b. bald eagle
c. quagga
d. rhinoceros

11 - .....is the path of energy that transfers from a living organism to another

a. Food type
b. Food pyramid
c. Food chain
d. No correct answer

12 – Yellowstone protectorate which was established for grey bear is in.....

a. China
b. USA
c. Wadi El-Hetan
d. Ras Mohamed

13 - .....protectorate is the **first natural protectorate** in **Egypt**

a. Saint Catharine
b. Ras Mohamed
c. Wadi El-Hetan
d. Petrified forest

14 – Ras Mohamed Protectorate includes.....

a. some rare fish
b. whale's fossils
c. rare coral reefs
d. (a) and (c) are correct

15 – The **age** of whale's fossils in Wadi El-Raiyan is.....million years

a. 30
b. 40
c. 68
d. 70

THANK YOU